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CONTENTS AND SUBJECT INDEX

Medical Treatment of Chronic Nonspecific Infections of Lungs and Bronchi in Children. Joseph Brennemann, M.D., Chicago.....801

The Surgical Treatment of Pulmonary Suppuration in Children. Evarts A. Graham, M.D., St. Louis.....806

Cardiac Asthma. Joseph H. Pratt, M.D., Boston.....809

The Bedside Study of Air Hunger. C. F. Hoover, M.D., Cleveland.....813

Ethyl Iodide Method for Determining the Circulation. John Walker Moore, M.D.; W. F. Hamilton, Ph.D., and J. M. Kinsman, M.D., Louisville, Ky.....817

Papers of Drs. Pratt, Hoover, and Moore, Hamilton and Kinsman discussed by Drs. Robinson, Levy, Piness, Pratt and Hoover.

An Epidemic of Undetermined Nature: Dengue? Frank S. Churchill, M.D., Milton, Mass.; Eugene M. Landis, M.S., and S. David Glusker, Philadelphia.....821

Focal Infection from the Laboratory Standpoint. John A. Kolmer, M.D., Philadelphia.....824

Retrodisplacement of the Uterus. W. C. Danforth, M.D., and C. E. Galloway, M.D., Evanston, Ill.....826

Postpuerperal Morbidity. Harold A. Miller, M.D., Pittsburgh.....830

Papers of Drs. Danforth and Galloway, and Miller discussed by Drs. Barrett, Lynch, Polak, Schwarz and Miller.

Viability of B. Acidophilus and B. Bulgaricus in Human Intestine. W. L. Kulp, Ph.D., New Haven, Conn.....833

Action and Use of Ephedrine. K. K. Chen, Ph.D., Madison, Wis., and Carl F. Schmidt, M.D., Philadelphia.....836

Discussed by Drs. Brown, Munsch, Major, Miller, Brooks, Johnston, Benjamin and Chen.

Diagnostic Criteria of Malignant Disease in Upper Right Quadrant. M. L. Graves, M.D., Houston, Texas.....842

Discussed by Dr. Friedenwald.

Skin Tests in Measles. Ruth Tunnicliff, M.D., and Ruth E. Taylor, M.D., Chicago.....846

Etiology and Diagnosis of Intra-Uterine Fetal Death. W. H. Browne, M.D., and H. L. Kincaid, M.D., Iowa City.....847

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Infestation by Fish Tapeworm, Diphyllobothrium Latum. D. J. Levy, M.D., and Merle Pierson, M.D., Detroit.....848

Human Infection with Brucella Melitensis, Variety Abortus, Treated with Mercurochrome. E. E. Gage, M.D., and D. A. Gregory, M.D., Sioux Falls, S. D.....848

EDITORIALS

Chemistry in America, 1876-1926.....850

Clinical Aspects of Chlorides.....850

Sympathetic Ramisection for the Relief of Spasticity.....851

Vitamin B and Gastric Motility.....852

CURRENT COMMENT

Metabolism of Various Tissues.....853

Child Welfare in New Zealand.....853

A Narcotic Survey of Louisiana.....853

(Subject Index on next page)

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SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E" Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics.

Abdomen, cancer diagnosis in....*842
Acanthosis nigricans....ab-888
Accidents, release based on physician's opinion....Ml-873
Addison's Disease, ephedrine in....*839, *841
Air hunger....*813
Aluminum utensils, cooking in....869
American Chemical Society....E-850
Anaphylaxis and roentgen rays....ab-889
Anesthesia, spinal, in urology....ab-883
ethylene-ether vs. ether....ab-878
Aneurysm, thoracic, treatment....ab-875
Angina minor....ab-882
Angiomas, familial hemorrhagic....ab-884
Animal dynasties in Mongolia....861
Anus, fissure of....ab-887
Appendicitis and phlebitis....ab-884
Arsphenamine intolerance, conjunctiva in....ab-888
Arthroplasty on hip....ab-879
Asthma, cardiac....*809
ephedrine in....*840, ab-889
Atropine, action on intestine....ab-889
Bacillus acidophilus and bulgaricus in intestines....*833
Barracuda not poisonous fish....ab-880
Bile Ducts, cancer, diagnosis....*844
Bismuth poisoning, fatal....ab-890
Bitumen, sulphonated....ab-876
Bladder, trigon, causes obstruction....ab-879
Blood, agglutinating system....ab-883
circulation, ethyl iodide test....*817
circulation vs. ephedrine....*836
coagulation vs. zinc salts....ab-884
epinephrine, physiologic....ab-884
glycolysis, course of....ab-890
groups, maternal vs. infantile....ab-884
picture in streptococcus serotherapy..ab-889
pressure vs. ephedrine....*836
tests, phenolphthalein vs. benzidine...ab-881
transfusion after roentgenotherapy....ab-884
transfusion vs. size of spleen....ab-889
vessels, tonus, loss of....ab-888
Book Notices....870
Books Received....872
Breast, cancer....861, ab-880, ab-887
pigeon, from bifurcate ribs....ab-876
tuberculosis with cancer....ab-880
British Association for Advancement of Science....860
Bronchus, infection in children....*801
Brucella melitensis, infection....*848
Calcium in body fluids....ab-881
Cancer in the young....ab-880
pathogenesis, necrohormone theory....865
transplantation of human cancer....ab-887
Carbon dioxide baths....866
Cataract, thyroid extract in....ab-877
Catgut, nonboilable, sterilization of....870
Cesarean Section....866
peritonitis after....ab-889
Chemistry in America, 1876-1926....E-850
Children, feeding....ab-888
welfare in New Zealand....E-853
Chlorides, clinical aspects, in body....E-850
Chloroform, in tetanus....ab-883
Chordoma, sacrococcygeal....ab-882
Colon, cancer, diagnosis....*845
Cornea, immunization, Besredka's....ab-890
Correspondence....868
Coué method....862
Cretinism and goiter....ab-888
Deaths....866
Dengue?....*821
Dextrose in malnutrition....ab-876
Diarrhea, casein-free diet in....ab-888
Diathermy has tonic effect....ab-879
Digitalis, standardization....ab-885
Drugs, return to....ab-885
Duodenum, roentgen diagnosis....ab-887
Ear, internal, radical surgery on....ab-890
Electrodialysis of antitoxin....ab-886
Electrolytes, rapid and slow drinking of ab-887
Emergency medical service....864
Enterococcus....ab-882
Ephedrine....*836, 849, ab-889
Epidemic of undetermined nature....*821
Epinephrine vs. ephedrine....*838
Epithelioma in young persons....ab-880
Erythroderma from neoarsphenamine....ab-883
Ethyl iodide test of circulation....*817
Evolution....860, 861
Extrapyramidal Tract, disease....ab-881
Fallopian Tubes, patency, determining..ab-880
Ferment therapy....ab-890
Fetus, death....*847
Floor wax, injurious....ab-886
Foreign Letters....860
Fractures, treatment....ab-879
Gallbladder calculi, prognosis....ab-888
cancer, diagnosis....*844
surgery of....866
Glanders, antivirus for....ab-884
Glycosuria, nondiabetic....ab-877
Goiter and cretinism....ab-888
Gonads, antagonism....ab-884
Gonorrhea diagnosis, active serums....ab-887
Gynandromorphism, experimental....ab-890
Hairlessness of mankind....861
Heart, cardiac asthma....*809
disease, ephedrine in....*840
function test, ethyl iodide....*817
sarcoma....ab-890
Heredity....860
Hermaphrodism, experimental....ab-884
Hiccup causes neuroencephalitis....ab-875
Hip Joint, arthroplasty....ab-879
fracture in Charcot's disease....ab-880
Hospitals, foreign patients in....862
Hypernephromas....ab-885
Infants, blood groups in....ab-884
feeding, goat's milk in....ab-887
Infection, focal....*824
Infundibulum tumor vs. lethargy....ab-885
Insulin and parathyroids....ab-886
Intestines, B. acidophilus and bulgaricus in..*833
Iodized Oil in chest roentgenography....ab-875
Jaundice and liver function tests....ab-890
hemolytic, splenectomy in....ab-888
spirochetal....ab-887
Keloid, endothermy and roentgen ray for ab-879
Kidney, cystic, congenital....ab-880
anomalies in syphilis....ab-885
function, filtration-reabsorption theory ab-881
hypernephromas....ab-885
Labor, elderly primiparas....ab-889
morbidity after....*830
Larynx, papillomas, spirochetes in....ab-884
tuberculosis and pneumothorax....ab-885
Leishmaniasis in Argentina....ab-886
Liver, cancer, diagnosis....*844
function tests, value....ab-879
function tests vs. jaundice....ab-890
Louisiana, narcotic survey of....E-853
Lungs, abscess....ab-885
abscess with tumor....ab-875
infection in children....*801
suppuration, surgery for....*806
Malnutrition, glucose in....ab-876
Malpractice, foreign bodies, clips....Ml-873
Marriages....866
Maternal morbidity....*830
Measles serum, Degkwitz'....ab-887
skin tests in....*846
Mediastinum, oat-celled sarcoma....ab-882
Medical Education, Registration....870
Medical Practice Act, trial by jury denied....Ml-873
Medicolegal....873
Meetings, Coming Meetings....874
Ménard, Maxime, death of....863
Meningitis from helminthiasis....ab-885
Mental Diseases, blood groups in....ab-887
Mercurochrome for Brucella melitensis infection....*848
Metabolism, basal, vs. pituitary extract...ab-877
basal, of various tissues....E-853
basal, vs. insulin-pituitary extract....ab-884
Milk, acidophilus and bulgaricus....*833
vitamins in, vs. sunlight....ab-881
Mosquito bites....869
Mucous Membranes vs. ephedrine....*839
Muscles, pectoral, absent....ab-882
smooth vs. ephedrine....*837
tonus, ramisection for....E-851
Mydriatic, ephedrine as....*838
Myocarditis, posttyphoid....ab-886
Myxedema....*816
Narcotic survey of Louisiana....E-853
Neoarsphenamine causes erythroderma....ab-883
Nephritis, hemorrhagic....ab-885
Neuromyelo-Encephalitis from hiccup....ab-875
News....854
New and Nonofficial Remedies....849
New Zealand, child welfare in....E-853
Nicotine vs. epinephrine secretion....ab-886
Ninhydrin flocculation test....ab-889
Nose, sinuses, displacement irrigation of ab-876
Orange juice, irradiated....ab-877
Pancreas, cancer, diagnosis....*844
Papillomas, spirochetes in....ab-884
Paralysis agitans, bulbocapnine in....ab-876
Paralysis, brachial plexus....ab-876
general, loss of weight in....ab-876
general, tryparsamide in....ab-875
spastic, ramisection for....E-851; C-868
Peptic Ulcer....ab-888
treatment....ab-889
Peritonitis after cesarean section....ab-889
Personality disorders, blood in....ab-875
Phlebitis and appendicitis....ab-884
Phylogenesis and human body....ab-887
Pituitary Body growth vs. thyroid....ab-877
Pituitary Extract vs. metabolism..ab-877, ab-884
Polyarteritis acuta nodosa....ab-883
Population and food supply....860
Precipitin serums....ab-886
Pregnancy, extra- plus intra-uterine....ab-879
intradermal salt solution test in....ab-879
ninhydrin flocculation test for....ab-889
toxemia, blood chemistry in....ab-879
uterus retrodisplacement in....*826
Privileged Communications, wills, testamentary capacity....Ml-873
Propaganda for Reform....867
Proprietaries, sale of, France....862
Pseudoperitonitis from ascarides....ab-885
Puerperium, morbidity after....*830
uterus retrodisplacement in....*826
Pyelitis in infants....ab-885
Pylorus glands, hyperplasia....ab-886
Pyramidal Tract, disease....ab-881
Queries and Minor Notes....869
Radio, broadcasting medical lectures....864
Radius, fracture, treatment....ab-882
Ramisection for spastic paralysis....C-868
for spasticity....E-851
Rectum, cancer, treatment....ab-880
Respiration disorders; air hunger....*813
Retinitis pigmentosa in tuberculosis....ab-888
Ribs, bifurcate, cause pigeon breast....ab-876
Rickets, irradiated substances for ab-877, ab-881
Sacrococcygeal Region chordoma....ab-882
Scarlet Fever toxin....ab-886
epidemic, analysis....ab-878
Schizotrypanum cruzi infection....ab-886
Sclero-edema in new-born....ab-885
Shock treatment and peripheral nerves..ab-887
Shoulder, habitual dislocation....ab-879
Sigmoid, cancer, treatment....ab-880
Skin, biology of....ab-887
diseases, heating screen in....ab-888
diseases, sulphonated bitumen in....ab-876
diseases, thyroid therapy in....ab-877
tests in measles....*846
Sleep; insomnia....865
Society Proceedings....858, 874
Spinal Cord, abscess....ab-881
State Board Examinations....870
Sterility, treatment....ab-889, ab-890
Sterilization of nonboilable catgut....870
Sterols, irradiated....ab-881
Stethoscopes....ab-876
Stomach, tuberculosis....ab-888
anacidity, diagnostic value....ab-878
cancer, diagnostic criteria....*842
motility, and vitamin B....C-852
tuberculosis....ab-888
Streptococcus, infection, causes fetal death *847
serotherapy, blood picture in....ab-889
Suicide and addiction....ab-886
Syphilis, diagnosis, active serums....ab-887
early, treatment....ab-877
infection....ab-886
treatment, results....ab-877
Tapeworm, fish, infestation by....*848
Temperature of American homes....861
Tetanus, chloroform in....ab-883
Thorax, roentgen study, lipiodol in....ab-875
Thyroid, regeneration....ab-877
extract in cataract....ab-877
hypophysis growth and....ab-877
therapy in dermatosis....ab-877
Tissues, basal metabolism of....E-853
Tonics and Sedatives....Adv. page 22
Tonsils, mixed tumor in....ab-876
Tuberculosis dispensary, function of....ab-882
immunization of infants....863
pulmonary, pneumothorax in....ab-890
pulmonary, retinitis pigmentosa with..ab-888
roentgen-ray diagnosis in....864
Typhus, nervous complications....ab-886
Urticaria from sunlight....ab-883
Uterus, retrodisplacement....*826
Viper bites, serotherapy....ab-888
Vital Statistics, death rate, minimum, competition in....ab-887
Vitamins in milk vs. sunlight....ab-881
B and gastric motility....E-852
Wassermann Test, analysis....ab-876
Workmen's Compensation, fortuitous exent, death from....Ml-874
Yohimbin vs. splanchnic nerves....ab-886

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MEDICAL TREATMENT OF CHRONIC NONSPECIFIC INFECTIONS OF LUNGS AND BRONCHI IN CHILDREN *

JOSEPH BRENNEMANN, M.D.

CHICAGO

[EDITORIAL NOTE.—This paper, together with the paper by Dr. Graham, which follows it, concludes the symposium on "Chronic Nonspecific Infections of the Lungs and Bronchi." The last issue of THE JOURNAL contained the papers by Dr. Jackson, Dr. Morse and Dr. Mullin.]

The medical treatment of chronic nonspecific infections of the lungs and bronchi in children is a topic that admits of individual interpretation and requires definition. Under "chronic nonspecific infections of the lungs and bronchi" I shall include chronic bronchitis, together with recurrent bronchitis, both simple and asthmatic; unresolved pneumonia; lung abscess, bronchiectasis, and certain types of massive collapse of the lung; and chronic empyema. Under "medical" treatment I shall include not only such measures as I, a nonsurgical man, would suggest in the treatment of chronic nonspecific infections of the lungs and bronchi; but also such advise as I, a medical man, might give with reference to seeking help from others, such as the surgeon, the bronchoscopist and the otolaryngologist. The pediatrician is a general practitioner to the young, and it is a part of his therapy to decide when, and when not, to consult with, or to refer a given case in toto, to a colleague in another specialty. In this way I shall hope in a general way to indicate a pediatrician's attitude toward the various medical and surgical procedures that seem indicated in these cases.

In discussing the medical treatment of these chronic conditions it would seem best to consider first some general measures more or less applicable to all of them; and, secondly, such measures as would seem indicated in each condition individually.

Of the general measures, three stand out as of paramount value: rest, hygiene, nutrition; behind them comes a lame fourth, drugs. This sounds trite and bromidic as a textbook; and yet these fundamental things have a pediatric aspect that lifts them out of the commonplace and gives them a real interest and a specific importance in this connection. Rest, hygiene, nutrition, have long been recognized as the important triad in the treatment of tuberculosis, in which long and intensive observation has sharply defined and unified our ideas. The nonspecific infections here under discussion are so similar to the chronic specific infection of tuberculosis that the same general treatment would seem indicated in the two.

REST

The first and, to my mind, greatest of all indications is rest. In the earlier days of climatic treatment of tuberculosis untold thousands died bathed in the sunshine and pure air of the ideal climate of the West and Southwest, because they did not know that rest was more fundamental than pure air and sunshine. In these nonspecific infections, rest is equally fundamental. The two imperative indications for rest are fever; and weakness, or fatigue. No matter what the condition, the child with fever belongs in bed. The higher afternoon temperature of the patient with fever and especially of the patient who is up and about should alone convince us that activity increases fever, and increases it in proportion to the degree of activity. Fever robs the child of appetite, hastens his metabolism, prevents a gain in weight, depresses him, and takes away from him that normal cheerful and happy childish outlook that is essential to convalescence.

The child that is tired and weak belongs in bed. Fatigue is incompatible with appetite and a normal gain and normal spirits. There is no more erroneous idea, and none unfortunately more common, that that the fatigued and weakened child gets weaker in bed and stronger from being up and about. As well expect the jaded horse to get strong from continuing the load. Our wards for cardiac and tuberculous patients show us in striking ways the beneficient effects of rest in bed in the hospital as compared with activity in the home.

There is a further consideration in pulmonary conditions that the tuberculotherapist has long recognized. Inflamations heal when at rest, and become aggravated by motion. Artificial pneumothorax, the cast on the inflamed joint, traction on the tuberculous hip, all recognize this principle. The lung, at best, cannot be put at complete rest; we must breathe. It can, however, be spared unnecessary activity by complete bodily rest. Activity increases the rate and depth of respiration, and so traumatizes the inflamed lungs and bronchi. Coughs are aggravated by activity, as we well know, and in many irritative, nonproductive coughs the mere act of coughing is a non-negligible trauma that in itself increases the cough.

By rest in bed I do not mean the current midday rest period; I mean absolute rest in bed, when it is indicated in any of these conditions. There is still a common idea that the rest cure cannot be carried out with children. The experienced pediatrician knows that it can. It requires, however, a technic that is distinctly pediatric. If the child is to be kept in bed, he must not be allowed to leave it for any purpose except

* Read before the Section on Diseases of Children at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

* On account of lack of space, this article is abbreviated in THE JOURNAL by the omission of two halftone illustrations. The complete article appears in the Transactions of the Section and in the author's reprints.

to have his bed made or to have his room aired. Partial bed rest leads to teasing, to yielding, and to a resulting lack of an unquestioned discipline that is essential to carrying out this procedure. It is a common observation that the child that is allowed to go to the toilet will develop startling superficial symptoms of diabetes. Under favorable conditions nearly every child can be made to acquire the bed habit as the natural one. The perfect contentment and cheerful acquiescence that prevails in the cardiac and orthopedic wards is eloquent proof of this. In some homes the calm and resourceful mother can accomplish this, if she has been adequately convinced of its necessity. If she cannot, and many cannot, then the therapeutic expedient of the stranger as caretaker, with an absent mother, must be called on. If this is not enough, then the strange nurse in a strange environment will practically always do it. The answer is the private room and the special nurse for the well-to-do; the ward for those unable to meet the expense. The child will rest and eat for the stranger in the strange environment and will get fat, if humanly possible; and, if he gains in weight, the underlying pathologic condition can often safely be ignored. I have especially stressed complete rest in bed because in the child there is commonly no intermediate ground, especially in the home, between complete rest and nearly full activity. The child is not merely a little man—he is a child and has a psychology all his own. If there is to be any considerable degree of rest, it must be complete.

HYGIENE

The second indication is proper hygiene. Most of the conditions that we are considering are largely the product of the temperate zone winter. They do not arise to an appreciable extent in the summertime and abate with the approach of warm weather. The answer is evident. The child with such conditions is better off in a warm, equable, sunshiny climate in a nonpopulous locality. Not all children can afford a change of climate, and pathologic exigencies may preclude it. The conditions must then be met at home. If so, what are the available and most beneficial ingredients of proper hygiene? The emphasis was once on pure, fresh air. Just now we are inundated with ultraviolet rays. That ultraviolet rays from the sun or from a quartz or carbon arc lamp, or those bottled up in their cheaper and more accessible congener, cod liver oil, will prevent and cure rickets, we know. We have furthermore good reason to believe that this therapeutic result is only part of a favorable influence on the general metabolism of the child. There seems also no doubt of their value in certain types of tuberculosis. That sunlight and other forms of radiant energy are helpful in the class of cases under discussion seems reasonable and is supported by clinical testimony. That there is, however, something about fresh air, outdoor air, air not in a room, seems indisputable. Again, our tuberculotherapist has long known and utilized this fact. The tuberculous patient dreads the indoor nights. The modern outdoor sleeping porch is not a mere fad, a mere psychic reaction, as those who are its devotees tell us so enthusiastically, and sleeping porches are used only at night when the sun is not in evidence. The camper knows the difference and feels oppressed and unrefreshed when he again sleeps in a room, even if well ventilated. I learned, too, thirty years ago in Colorado that one practically never caught a cold when camping out, and that a cold was a regular sequence to a return to living indoors, and the prevention of colds is a prime factor in all of these conditions.

It can hardly be doubted, in this connection, that our national institution of dry, overheated rooms, in spite of materially warmer winter clothing, is a fundamental factor in heightening susceptibility to those acute upper respiratory tract infections that are so clearly the initial stage of these chronic infections. The transition from a sweltering indoor atmosphere of 80 to an outdoor temperature of 10 cannot be made, habitually, with impunity. That minimal clothing is not detrimental, in this respect at least, would seem to be borne out by the fact that women are not more, if they are not indeed less, prone to these infections at the present time than are men, who serve admirably as an equal number of experimental controls. Perhaps the saving grace lies in the fur coat that makes the whole procedure rational.

Ultraviolet ray therapy can be used in any climate or season. If the sun is not out or cannot get through the pall of smoke and dust, the lamp can be used. It is still, however, in the panaceal stage and still rests more on testimonial than on scientifically established evidence in this type of case. Suitable fresh air is not so easily obtainable in the temperate zone winter. Fortunately, the cold air fad for all kinds of pneumonias and bronchial troubles has about run its course. Cold air is not good for inflamed bronchi, and rarely so for cough from any source. When warm days are not frequent, one must have recourse to changing the child from one room to another, airing the one not in use. A fireplace and an electric heater are useful adjuncts, especially the former.

Cod liver oil, which may well be considered under hygiene instead of under medicinal or nutritional therapy, has long enjoyed a unique reputation in the prevention and treatment of all chronic and recurrent pulmonary conditions. In spite of its present well nigh universal use in infancy and even later, its effect in this respect is hard to estimate. It is certainly far from specific, and respiratory tract infections seem constantly on the increase in spite of its use.

NUTRITION

The problem of nutrition is an important one and is intimately interwoven with the other indications. It is commonly not so much a question of good food as of conditions that will make the child eat. Rest in bed will often do more than anything else to bring back an appetite. Fresh air and sunshine are next in importance. Tonics do little good in themselves. Occasionlly, iron seems to help. Coaxing or forcing a child into eating has nearly always an effect opposite to that intended. He is not merely a hopper, but an individual with a psychology. A judiciously feigned indifference to whether he eats or not is commonly far more effective, especially when combined with a strange environment and an absent mother. In selected cases, a dollar a pound is an excellent investment. The nature of the food is hardly as important as the quantity. If the child will only eat a fairly well balanced diet, and plenty of it, the food elements, the calories and the vitamins can go hang. A great deal of emphasis has been laid in recent times on milk, chiefly based on animal experimentation. The slogan so dear to the milk producers, to the lay dietitians, and to some laboratory workers, "Drink more milk—a quart or more a day" was not invented by a clinician, and certainly not by a pediatrician. If the child likes milk and a quart a day

will not interfere with his appetite and comfort, there is of course no objection to it. But if he will eat more if he drinks less, so much the better, and we will lose no sleep over xerophthalmia or beriberi or any other less tangible evidence of vitamin deficiency.

DRUGS

The question of medicinal treatment in these chronic infections is interesting perhaps more from a negative than from a positive standpoint. There is still prevalent an idea, apparently not wholly restricted to the laity, that the Almighty caused a certain number of diseases to appear on the earth and that somewhere there lies hidden a specific curative chemical agent to be sought and found for each of these diseases. Cough, the one symptom common to all these infections, and almost the only druggable one, has probably been more promiscuously and artistically drugged than any other in all the range of medicine. Only in recent times has there been a reaction, but even then much more in theory and in conviction than in practice. When I studied Osler, as a medical student, he was considered a sort of therapeutic nihilist, and many students invested in another current Practice of Medicine because it was "great on treatment." I recently got out my edition of Osler of 1898. Judged by present advanced ideas it seemed replete with pharmaceutic recommendations in the treatment of these conditions. It is interesting to turn to the final utterances on this subject of this master clinician, who was always a little ahead of his times. When Osler lay ill with his last illness, knowing that it was his last; when racked with paroxysms of cough due to most of the things we are here discussing; when his interest was pathetically real and personal, he wrote to a friend in his characteristically incisive manner: "There is nothing I do not know of the varieties and vagaries of cough and coughing. . . Shunt the whole pharmacopeia, except opium. It alone in some form does the job. What a comfort it has been." And again, a few days later to his former secretary: "I have been having a devil of a time—in bed six weeks! A paroxysmal bronchitis, not in either of your books! . . . Very strange attack. I am very comfortable except in my paroxysms. All bronchial therapy is futile—there is nothing my good doctors have not made me try, but the only thing of any service whatever in checking the cough has been opiates—a good drink out of the paregoric bottle, or a hypodermic of morphine." His nurse also tells us that he disliked mixtures very much, could hardly be induced to take them, and would say: "Why spoil a wonderful drug like opium by mixing it with inferior things?"

I think I may safely say that most of us are in fair accord with what has just been quoted, no matter what our practice. We probably all prescribe other drugs for these chronic coughs, and yet, which one is there whose beneficial effects do not rest, again, on pharmacologic and testimonial rather than on demonstrable clinical evidence? We are perhaps unfortunately still in a position with Falstaff, where "discretion is the better part of valor." Lay education must be by evolution, not revolution, and we can no more as yet wholly disregard the psychic than can the Christian scientist. The patient has a cough; something must be done; it always has been done; if we do not do it, some one else will. A simple, harmless cough syrup, and in our present stage of evolution it must be a "syrup," sets the whole family at rest whether it does any good or not. The present widespread use of a certain pharmaceutically well backed cough syrup that is very convenient because it just escapes the Harrison law is good evidence that our faith in our favorite combinations was not inviolable. In painful, distressing coughs, on the other hand, coughs that rack and cause dread and loss of sleep, no matter what the pathologic condition, we will wisely resort to some form of opium for its own real effect, and, if used at all, in dosage sufficient to bring about relief. This can be done all the more safely with children, because there is danger neither of habit formation nor of accessibility to the drug.

The indication for opium is not so much to cure the cough directly as to relieve the patient and give him rest. It is clearly not indicated as a routine measure just because there is a cough; and in certain productive, nondistressing coughs it is clearly contraindicated. It must not stand in the way of bronchial drainage by numbing the normal protective and beneficial cough reflex, unless there is a greater need for relief from distress and inability to sleep. In both the irritative, nonproductive coughs and in those with abundant discharge, steam inhalations impregnated with some soothing substance like compound tincture of benzoin and oil of eucalyptus, which have, moreover, a convincing aroma, would seem more rational, in the one case to soothe an inflamed mucous membrane and in the other to liquefy thickened secretions and to promote their expulsion. This can be done with the use of a tent or a cornucopia; or often better by saturating the room with the warm vapor. The source of heat should be an electric stove, preferably; or a kitchen stove; and very definitely not an alcoholic preparation that may contain wood alcohol.

The use of vaccines in the cure of these conditions would seem to be justfiably restricted to an ever narrowing field; and it would hardly seem appropriate in the present state of our knowledge, to dignify, by a discussion before a scientific body such as this, the prophylactic use of vaccines in the prevention of the underlying colds or grip.

INDIVIDUAL CHRONIC INFECTIONS

The discussion of the medical treatment of each individual chronic infection can be brief.

In chronic bronchitis, a relatively rare condition in children, all that has been said under general treatment is applicable. Chronic bronchitis must always be considered a symptom of something else, until that something else can be excluded. This is especially true of tuberculosis, as Dr. Morse has emphasized. A very important item here in the treatment is not to be led astray by an overenthusiastic and dogmatic roentgenologist who has a tuberculosis complex.

Inseparable from a consideration of chronic bronchitis is that of recurrent bronchitis both simple and asthmatic. In both, the primary aim is to prevent upper respiratory tract infections. Contact with those so infected should be avoided exactly as it is with the other contagious diseases. Sinus infections, which now have the spotlight, here may play an important part and should be looked after if one can find an interested and experienced otolaryngologist. Adenoids, too, if present to the extent of causing symptoms, should be removed at any age for reasons that I will assume to be obvious. In older children the recurrently inflamed tonsil should have the same treatment. In younger children, say up to 3 or even 4 years of age, removing the tonsils as a prophylactic measure against recurrent infections, and especially against recurrent and subacute bronchitis, is, in my experience,

a very disappointing, if not, indeed, useless, procedure. One hears too often to dismiss it casually, the story that such infections are just as frequent as they were before and bronchitis a little more protracted after the tonsils are removed early. In the first two or even three years it is a rarity to find an isolated tonsillitis to which one could attribute an isolated rôle. All one can commonly say at this age is that the child has an inflamed throat and nasopharynx, and usually much more. In other words, we have an extensively inflamed mucous membrane including that which covers the tonsil; but the tonsil itself is not the atrium of infection nor does it bear the brunt of it as it may in later life. Especially is this true of those cases in which there are abnormally frequent infections, with bronchitis as a nearly constant symptom. Here it would seem fair to assume that we have an abnormally sensitive mucous membrane, sensitive to infection, to cold, to dust, to coddling, to drafts, to the absence of fresh air and sunshine, to changes of temperature, just as the skin in eczema is abnormally sensitive to much the same kind of external irritants. Very often the two are combined in what Czerny has called the exudative diathesis. To remove the tonsils in these cases in the first two or three years to prevent recurrent infections has much the same therapeutic value as removing a portion of the cheek for eczema. Overfeeding, especially with eggs, meat and milk should be avoided; and coddling, overheated rooms, and overwarm clothes, bad hygienic surroundings, and exposure to those with colds and grips, even much more so.

In many of these cases the cool bath, if well tolerated, and only then, seems to have a favorable prophylactic value. I know of no medicine that has the slighest effect, except, perhaps, cod liver oil.

All that has been said of recurrent simple bronchitis applies equally to the recurrent asthmatic type. If the evidence obtained from older children and adults were not so convincing that asthma is apparently nearly always, perhaps always, an allergic reaction, it would be hard for the pediatrician to believe it from his own experience, especially with babies and younger children. Certainly the vast majority of patients that have asthmatic symptoms at this age have them in association with and as a symptom of an upper respiratory tract infection. There are children, and especially babies, who have an asthmatic type of bronchitis with nearly every such infection, just as some children have spasmodic croup under the same conditions. That we have here to deal with a bacterial allergy is possible, perhaps even probable. And yet it has always seemed to me more inviting to think of the asthmatic condition in these cases as being due to a spasm of the bronchi, as croup is a spasm of the larynx, both a reaction to an adjacent inflammation of the mucous membrane and occurring only in susceptible persons. In both cases the susceptibility tends to cease after a few years. We know, too, that the younger the child with this type of asthmatic bronchitis, the more favorable the outlook for an early cessation and for the nonoccurrence of a chronic asthma of the adult type.

In the treatment of these cases, in addition to what has been said, especial emphasis should be laid on climatic treatment. A change during the winter months to a warm, equable, sunshiny climate, in a noncongested locality is of the greatest value There is no serviceable substitute for it. If the attack itself is severe enough to warrant it, the hypodermic use of epinephrine is, as we know, almost specific in relieving the acute distress.

Some interesting observations have come recently from Chevalier Jackson's bronchoscopic clinic in relieving asthma by bronchoscopic cleansing and drainage of bronchi, together with bronchoscopic instillation of medicated solutions, and the simultaneous use of autogenous vaccines. The results reported would seem to warrant further trial, whatever they may be due to.

The asthmas of older children, or of any age, not associated with recurrent infections, do not belong in this discussion.

In unresolved pneumonia, whether of the lobar or the now more prevalent chronic bronchopneumonic type, we have nothing to offer except rest in bed, long and complete, if there are fever, cough and weakness; time; food; fresh air; quartz lamp treatment, especially for the rachitic baby; and eventually, if pathologic and financial conditions permit, a change to a warm, equable, sunshiny locality for the rest of the winter. Exposure to the roentgen ray has been recommended, but requires further observation to carry conviction.

In lung abscess there is little that the medical man can do except to carry out general supportive measures, rest, food, good air, sunshine and light exposure, together with postural treatment. The patient should lie on the unaffected side as much as possible if the abscess has broken through a bronchus; and on the affected side if it has been drained surgically. Inhalations may help in liquefying and promoting the expulsion of thickened pus and secretions. Artificial pneumothorax has been advocated in selected cases and tried to some extent, to help by pressure on the abscess cavity to empty it and so promote healing. Codeine or some other opiate may be used judiciously to relieve distressing cough.

BRONCHOSCOPIC AND SURGICAL HELP

The really important function of the medical man in the treatment of the lung abscess that he has diagnosed is to decide to whom to turn for help. We have found the surgeon reluctant and the bronchoscopist eager, and we think that is as it should be. We turn first to the bronchoscopist, or, rather, we go with the surgeon to the bronchoscopist. If the abscess has ruptured into a bronchus we turn the patient over to the bronchoscopist for bronchoscopic treatment. If there is no communication with a bronchus, we want the patient examined, and if indicated, treated, bronchoscopically first, and surgically only as a last resort. If the bronchoscopist finds an abscess pointing into a bronchus, he can at times drain it at this point.

I believe we shall find increasingly that the greatest and most frequent service that the bronchoscopist will render in this general type of cases, both acute and chronic, is not in the fully formed abscess, but in those cases of postoperative and foreign body, massive collapse of the lung, that often so closely simulate an abscess that they cannot be distinguished from it by the ordinary clinical and roentgenologic examination. My own conversion to this conviction in the matter of postoperative cases came from one case that was so illuminating that I feel warranted in telling about it even in Dr. Jackson's presence:

A little girl of 5 years came to us profoundly ill. Following a tonsillectomy five weeks previously, she developed a high fever that touched 104 and 105 F. daily, up to the time of admission. Clinical examination was indefinite, but the roentgen ray showed three sharply defined dense areas involv-

ing both lungs, varying in size from a golf ball to an orange. We all concurred in the diagnosis of multiple abscess. The surgeon rightly refused to operate under the circumstances, though the largest mass was peripheral and adherent to the parietal pleura. We waited ten days, hoping, with Micawber, that "something would turn up." The child remained much the same, gradually getting weaker and sicker. The masses did not grow much in size except one near the hilum that did (fig. 1). There was at times a very small amount of offensive expectoration. The surgeon suggested a bronchoscopic examination. It seemed to me a useless torture in a hopeless case, and I rather protested. With one bronchoscopic treatment, which was well borne, as all bronchoscopic treatments seem to be in skillful hands, Dr. McGinnis, our bronchoscopist, instituted free drainage by removal of excessively foul material from the bronchi on both sides, with improvement in twenty-four hours, miraculous improvement in a few days, and a complete clinical and roentgenologic cure in less than four weeks (fig. 2), with a gain of 5 pounds (2.3 Kg.). There was never more than a slight expectoration after the treatment, but the breath was the foulest I have ever known when the child coughed.

These dense masses, though potential abscesses, were evidently not yet true abscesses in that they had not frankly suppurated, although the high temperature had persisted over six weeks. Manifestly they were portions of the lungs to which the bronchi were plugged by aspirated blood, or shreds of tonsil, or adenoid; from which the air was absorbed, causing an atelectasis and a roentgen-ray shadow, and in which the secretions and foreign matter became infected and excessively foul. These cases seem exactly analogous to massive collapse of the lung due to the inhalation of any foreign body, such as have been reported in great and ever increasing numbers, especially from Dr. Jackson's clinic. The pathogenesis seems so clear in these cases that in every postoperative involvement of the lung, especially after tonsil and adenoid operations, the first indication in the treatment would seem to be to call in an experienced bronchoscopist to remove the plug, wash out the bronchi and institute free drainage.

If there is a real abscess that proves inaccessible to the bronchoscopist, and is accessible to the surgeon, then it is, of course, turned over to the latter.

In a case of chronic massive collapse of the lung, with a shadow involving a whole lung and containing the heart, which has become bacteriologically quiescent and cannot be relieved by the bronchoscopist, I know of nothing to do except to turn it over to the orthopedic surgeon as we would any other deformity, or threatened deformity, in any of these conditions, to try to prevent an otherwise inevitable extreme lateral scoliosis. We have one such case of unknown etiology that came to us in a chronic condition, and I wonder what is going to become of the patient.

Much that has been said about lung abscess applies equally to bronchiectasis. The medical man can only look after the general care of these cases, together with facilitating drainage and emptying the dilated bronchi, by appropriate posture and inhalations. Lying on the unaffected side causes freer expectoration in some cases. In many, one can cause a daily free evacuation of large amounts of pus by learning to hold the patient in a certain position, notably a nearly vertical position over the edge of the table or bed, head downward, with the affected side somewhat higher than the other. The bronchoscopist is again called in if these simple measures do not lead to a fair improvement. Better drainage through bronchoscopic cleansing of the affected areas and of the bronchi leading to them gives some relief to the patient, and at least a chance of permanent satisfactory improvement and even symptomatic cure. If this does not bring sufficient relief, we begin to think of the surgeon. While the condition is almost unbearable in a well developed case, often ostracizing the patient from his fellows and leading to grave mental depression, and while in many cases it is quite incurable by any other treatment, a medical man hesitates to resort to surgery. A lobectomy may be just a part of the day's work to a surgeon, but it seems rather heroic to a medical man. The parents too may hesitate when one explains to them a 40 per cent chance of death at the time, and only a 13 per cent chance of permanent cure. Still, in selected cases, when the condition is clearly restricted to one lobe, as shown most convincingly by a pneumonographic study, and is becoming unmitigated and intolerable, one would not delay too long to recommend surgical intervention. The surgeon will justly tell us that we wait too long. In the case that we finally turn over to him this is doubtless true, and yet he will probably find it in his heart in the present state of thoracic surgery to forgive us our delay. If the condition is a very extensive one, involving more than one lobe, and especially if bilateral, there will probably be complete agreement that the case is not a proper one for surgery.

Chronic nondraining empyema in the older child we consider frankly a surgical disease in which the medical man can only assist in the diagnosis and general treatment, and perhaps with a few preliminary aspirations in extreme cases. In the infant under 2 years of age, and especially under 1 year of age, and there is a very great difference between the two, when surgical intervention for some reason is still attended by a very much higher mortality than in older children, we still prefer to aspirate repeatedly in the fair hope that this alone will cure the condition, even if not all the pus is removed at the last aspiration. Our surgeons are in accord with this view. Having once witnessed a sudden death as the needle was pushed into the chest, and having good reason to know that the danger of puncturing the lung and producing a more serious pyopneumothorax is not a negligible one, I do not look on repeated aspiration as a simple, care-free, procedure, and yet in very young babies it is my experience that it is less dangerous as to life, and more hopeful as to cure, than is more radical surgery. In the event of a pyopneumothorax, of which we have had an unusually large number this spring, we usually turn them over at once to the surgeon, and decidedly so if the amount of free air increases to any considerable extent at any age. In chronic empyema that is draining, we can only help the surgeon, and ultimately the orthopedic surgeon, by the use of all the general measures already discussed.

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Gas Hazards Encountered by Every One.—Almost every individual in his daily life is subject to possible danger from asphyxiation, by fire or explosion due to one or more of the combustible gases used for the production of light, heat and power, declares the Bureau of Mines, Department of Commerce. . . . Gasoline fires and explosions are among the most common of present-day hazards. Only 1.5 per cent of gasoline vapor in air is sufficient to make an inflammable mixture. Air flowing over liquid gasoline and many crude oils readily becomes charged with enough hydrocarbon vapor to transmit flame on reaching some source of ignition such as a flame, an electrical spark, or short circuit. . . . Oxygen containers must be absolutely free from even traces of oil, organic matter, or in fact, any combustible substance. Compressed oxygen is a very dangerous substance. An oxygen cylinder containing no more than a film of oil on its inner surface is just as truly an explosive as nitroglycerin.

THE SURGICAL TREATMENT OF PULMONARY SUPPURATION IN CHILDREN *

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There is no particular treatment of pulmonary suppuration that will be equally satisfactory in all cases. It is unwise at present to attempt to standardize the treatment of these conditions. On the contrary, each case must be judged by itself, and the best results will be obtained if such cases are studied by a team consisting of a medical man experienced in this kind of work, a surgeon with equal experience, and a skilled bronchoscopist.

The method of treatment selected for a case of acute pulmonary abscess will depend largely on its location. There are, roughly, three main types of acute suppuration: those cases in which the lesion is chiefly about the hilum; those in which it is at the periphery of the lung, and, finally, the cases of multiple abscess. Any of these conditions may become chronic and may be associated with bronchiectasis. In children the frequency of the aspiration of foreign bodies into the lung makes it imperative to search carefully in every case for such a possibility. This has already been emphasized in the preceding paper of this symposium. Before treatment is begun, therefore, the diagnosis should include attempts to locate the suppuration to determine the presence of cavities, the presence of foreign bodies, and nature of the infection, with particular reference to the presence of tubercle bacilli or the spirochetes of Castellani, etc. For the location of the suppuration and the determination of cavities, ordinary physical and roentgen-ray examinations are often unsatisfactory. Lesions concealed behind the shadow of the heart and fluid levels in small cavities will often be made to appear in a striking manner if the patient is examined in a number of positions. It is remarkable how often this simple principle is neglected. Diagnostic pneumothorax is also of great value. Singer and I [1] recently discussed these features in another paper. The bronchoscope, in the hands of an expert, will often reveal this information positively, and the newer method of using lipiodol, as proposed by Sicard and Forestier,[2] will undoubtedly prove of enormous value. It should be emphasized also that the aspirating needle should not be used in cases of suspected pulmonary suppuration because of the danger of creating an empyema from leakage of pus along the needle track.

The mechanism of healing of an abscess of the lung is the same as that of any other abscess. When this mechanism can be carried out spontaneously, healing occurs with the same degree of promptness and satisfaction that occurs with abscesses elsewhere. It is not surprising, therefore, to find that many pulmonary abscesses heal spontaneously without treatment. It is impossible to state in what proportion healing occurs in this way, because probably in the majority of instances such abscesses are not recognized clinically. Refractoriness in the healing of a pulmonary abscess is usually due either to inadequate drainage or to difficulty in the obliteration of the abscess cavity. In most tissues of the body, healing of an abscess occurs because, after drainage, its walls fall together, and in healing in this way the cavity is quickly obliterated. In the lung, however, it is often more difficult for the walls of the abscess to fall together because they are held apart by a rigid chest wall on one side and perhaps by adhesions on the other. In this respect, abscesses in the lung resemble somewhat abscesses in the bones, and they often display the same tendency to chronicity. In addition, because of suppuration, the cartilage in the walls of the bronchi often becomes necrotic. The bronchi then become dilated, and extensive deposition of fibrous tissue in their walls occurs. The normal epithelial lining is in part replaced by granulation tissue which bleeds easily and leads to pulmonary hemorrhages. This condition of so-called bronchiectasis, as might be expected, occurs often hand in hand with chronic pulmonary abscess; and it is often impossible to draw any sharp distinction clinically between the two conditions, although by many clinicians they are regarded as more or less distinct entities.

With these brief considerations before us, it will be seen that the principles of treatment, in the main, may be classified into (1) measures directed against the exciting cause; (2) the promotion or improvement of drainage; (3) the collapsing of cavities; (4) the removal of chronically diseased tissue, and (5) general supportive measures, with particular reference to light therapy. It is obviously also irrational to apply any particular form of treatment to all cases.

Measures directed against the exciting cause consist not only of the removal of foreign bodies,[3] a subject that has already been discussed by Dr. Jackson, the recognized master in this field; but they also consist of a direct attack on the invading organism so far as that is possible. Unfortunately, most of the organisms commonly encountered are not subject to attack by specific therapeutic agents that give striking results. Vaccines are of doubtful value. There is one type of infection, however, in which striking results may be obtained. I refer to those cases which are associated with a spirochetosis, first described by Castellani. In such cases arsphenamine is of remarkable value, sometimes leading to a prompt disappearance of the spirochetes and to a rapid healing of the lesion. The spirochetes may be found in the sputum or pus from either the acute or the chronic cases. In the experience of Singer and myself, they occur in about 2 per cent of all cases of pulmonary suppuration. Recently Kline and Berger [4] reported sixteen cases of spirochetal pulmonary gangrene, of which eleven were treated by arsphenamine with gratifying results. More recently, Bezançon and Etchegoin [5] described an improved method of finding the spirochetes in the sputum. Somewhat allied to measures directed against the exciting cause is the matter of correcting suppuration in the nasal sinuses. Astonishing improvement, especially in the cases of chronic pulmonary suppuration, often follows the treatment of chronic nasal suppuration. This question has not received nearly so much consideration as it deserves. Especially in children we have

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* Read before the Section on Diseases of Children at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Singer, J. J., and Graham, E. A.: Roentgen-Ray Study of Bronchiectasis, Am. J. Roentgenol. 15: 54 (Jan.) 1926.

2. Forestier, J.: Roentgenological Exploration of the Bronchial Tubes with Iodized Oil (Lipiodol), Radiol. 6: 303, 1926.

3. A condition closely allied to that of foreign body is bronchолithiasis. It is much more common in cases of chronic suppuration than one would suppose from the literature. The coughing up of one or more broncholiths often results in the prompt recovery of the patient.

4. Kline, B. S., and Berger, S. S.: Spirochetal Pulmonary Gangrene Treated with Arsphenamins, J. A. M. A. 85: 1452 (Nov. 7) 1925.

5. Bezançon and Etchegoin, cited in Paris Letter, J. A. M. A. 84: 1228 (April 17) 1926.

noted a very frequent association of chronic nasal and chronic pulmonary suppuration.

Spontaneous drainage is usually accomplished through the trachea, but sometimes into the pleural cavity and more rarely through the chest wall after the lung has become adherent to it. To obtain the maximal spontaneous drainage through the trachea, it is necessary to place the patient in the most suitable position. We have found a specially constructed table to be most suitable for this purpose, and by means of it the postural drainage is carried out several times a day. This simple procedure alone is often sufficient to result in healing. An additional aid to drainage through the natural outlet is by means of repeated use of the bronchoscope with suction, as suggested by Jackson. When an abscess has ruptured spontaneously into the pleural cavity, it often happens that simple drainage of the empyema results in the prompt healing of both the pulmonary abscess and the empyema. In such a case a sudden rupture of the abscess into the pleural space apparently gives adequate drainage, provided the pus is allowed to escape through drainage of the pleura.

In some cases, surgical drainage of the pulmonary abscess is indicated. These are the cases particularly in which a large abscess is situated at the periphery of the lung, in which there is but little drainage through the trachea, and in which marked toxic symptoms are present. Ordinarily, unless adhesions are already present between the lung and the chest wall, the operation should be carried out in two stages, the first stage to create adhesions and the second to produce drainage through these adhesions. Surgical drainage is only rarely indicated in those cases in which the abscess is situated at the hilum, for those are the cases in which drainage by posture and through the bronchoscope gives the best results.

Surgical drainage in any case should not be undertaken too early, and especially not during the formative stage of the abscess. More and more conservatism is being shown in regard to this form of treatment by those who have had the largest experience in this kind of work. When a relatively small abscess is surrounded by a large edematous zone of pulmonary tissue, disastrous results are likely to follow surgical drainage, a point on which Miller and Lambert [6] have commented. In our own work we find that from year to year we are operating on a smaller proportion of patients than in previous years.

The collapsing of cavities may be artificially aided by pneumothorax, by avulsion of the phrenic nerve to produce paralysis of the diaphragm, and by thoracoplastic operations which have as their principle the extrapleural removal of portions of the ribs on the affected side in order to permit retraction inward and downward of the whole side of the chest. Methods of treatment such as these are chiefly indicated in those abscesses which are situated at or near the hilum, in which the collapsing of cavities in the lung will be accompanied by an increased drainage of pus into the bronchial tree. On the other hand, in those cases in which the abscess is near the periphery of the lung, any form of collapsing therapy is ill advised because it may lead to a rupture of the abscess into the pleural cavity, it may increase the spread of the infection in the lung, and it is more likely to reduce than to increase the amount of drainage into the bronchial tree. Of all the methods of compression therapy, artificial pneumothorax is the simplest and probably the safest, although even this procedure is not without danger, not only because of the complications just mentioned but also because of the danger of crowding over of the mediastinal structures if too much air is injected, and because of the danger of air embolism from injecting air into an open pulmonary vein, as shown by Schlaepfer.[7] This catastrophe also is especially likely to happen, presumably, if by mistake the air is introduced into the lung tissue instead of into the pleural cavity. To guard against such an occurrence it is advisable to use an instrument with an attached manometer so that by means of the demonstrated negative pressure it can be accurately determined that the needle is in the pleural space before air is introduced. Singer and I try artificial pneumothorax almost as a routine procedure in cases of abscess near the hilum before resorting to more radical surgical measures. We begin with a small amount of air, seldom more than 200 cc. in an average adult, and a proportionately smaller amount in children. Its value lies not only in therapy but also in diagnosis; for by this means much information can be obtained concerning the presence of adhesions, the location of the abscess, etc., which cannot be obtained in any other way. We have also found occasionally that in cases complicated by the spontaneous presence of non purulent pleural fluid, some of the fluid can be withdrawn and for it an equal or greater volume of air introduced, thereby continuing or increasing the compression exerted by the fluid. Childhood or infancy has not contraindicated the use of pneumothorax in our experience. Many others, including Rich [8] and Tewksbury,[9] have been enthusiastic advocates of pneumothorax therapy in pulmonary suppuration. Other methods of collapse therapy, such as thoracoplasty and avulsion of the phrenic nerve, should not be undertaken in cases of acute suppuration, but they occupy an important place in the treatment of chronic cases.

The removal of the diseased tissue, especially in the chronic cases, was recognized long ago as a desirable accomplishment if it could be done safely. Unfortunately, the ordinary operation of lobectomy has been associated with so high a mortality as to seem prohibitive to many. But before condemning it one should read the discussion of it by Lilienthal,[10] whose personal experience with this procedure has been greater than that of any one else. In other papers I [11] have described a method of removing the diseased tissue which is not accompanied by the chief danger of the ordinary lobectomy; namely, suppurative mediastinitis. It consists in reaming the diseased tissue out of the lung, by means of an actual cautery. It may be done in as many stages as desired. The control of hemorrhage has not been difficult in my experience, since the larger arteries encountered are branches of the pulmonary artery in which the blood pressure is low, usually about 25 mm. of mercury. This procedure, by making a large cross

6. Miller, J. A., and Lambert, A. V. S.: The Treatment of Abscess of the Lungs, Am. J. M. Sc. **171**: 81 (Jan.) 1926.

7. Schlaepfer, K.: Fibrosis of Lung Following Ligation of Pulmonary Artery, Combined with Phrenicotomy and Following Partial Occlusion of Pulmonary Veins, Arch. Surg. **6**: 358 (Jan.) 1923.

8. Rich, H. M.: Acute Lung Abscess Treated by Therapeutic Pneumothorax, Am. J. M. Sc. **164**: 428 (Sept.) 1922.

9. Tewksbury, W. D.: Acute Pulmonary Abscess Following Tonsillectomy Treated with Artificial Pneumothorax, Ann. Clin. Med. **4**: 347 (Oct.) 1925.

10. Lilienthal, Howard: Thoracic Surgery, Philadelphia, W. B. Saunders Company, **2**: 82-284, 1925.

11. Graham, E. A.: Cautery Pneumectomy for Chronic Suppuration of the Lung, Arch. Surg. **10**: 392 (Jan.) 1925; Rôle of Surgery in the Treatment of Pulmonary Suppuration, J. A. M. A. **85**: 181 (July 18) 1925.

section of the bronchial tree, has the added advantage of providing better drainage than can be obtained by any other method. Also pressure can be exerted by packing in the wound. It combines in one procedure, therefore, the various principles that are known to be effective in the treatment of chronic pulmonary suppuration; namely, drainage, compression and removal of diseased tissue. It is not used in the acute cases, but only in the most refractory chronic cases.

In chronic cases of both bronchiectasis and of clinically diagnosed lung abscess, the general principles of treatment are the same. In detail, however, they differ. For example, methods that produce permanent compression have been used to great advantage in some of these. Hedblom [12] has had excellent results in improving the condition of patients with bronchiectasis by using the operation of extrapleural thoracoplasty. Avulsion of the phrenic nerve has often proved a useful adjunct to thoracoplasty in these cases. But even in cases in which the condition has been present for several months or a year, we have found that simple pneumothorax therapy is often effective.

In treating any case of pulmonary suppuration, it is important to give attention to the building up of the patient's resistance as much as possible. High caloric diets are advisable, and heliotherapy is a very important adjunct that should not be neglected.

The treatment of cases of bilateral suppuration has usually been regarded as practically a hopeless procedure. But by judicious use of the various principles of treatment outlined above it has been possible to relieve of their symptoms several patients with bilateral suppuration and to improve others. Singer and I [13] recently reported our results in a series of such cases. In one case of acute bilateral pulmonary abscess the operation of cautery pneumectomy was done on both sides in a man who was nearly moribund at the time. In one side complete healing occurred and in the other a bronchial fistula remains, but the man is at work earning his living. In some chronic cases we have treated the worse of the two sides with pneumothorax, followed by the complete recovery of the patients. We have also concluded from these cases that in many instances a patient who seems to have a bilateral lesion from the clinical and roentgenologic standpoints may after all have chiefly a unilateral lesion from which most of the symptoms are coming.

In considering the management of cases of pulmonary suppuration, one must also bear in mind certain aspects that concern the prognosis. Until specific means of combating the particular infection in any case are discovered, pulmonary suppuration will probably of necessity be associated with a high mortality, no matter what form of medical or surgical treatment is instituted. It will also carry with it a high percentage of chronic invalidism. Cases of multiple abscesses will necessarily be associated with a less favorable prognosis than those of a large single abscess that can be satisfactorily drained, although we have treated successfully with the cautery operation some cases of multiple small lung abscesses. The type of infection also probably affects the prognosis somewhat. But one of the most distressing and serious aspects of pulmonary suppuration is the complications, and of these perhaps the most tragic is cerebral embolism, sometimes followed by sudden death and at other times by the development of brain abscess. Tuffier [14] considered the coincidence of brain abscess as high as 13 per cent. This figure is probably too high, yet the complication happens sufficiently often to make it apparent that pulmonary suppuration will probably always carry with it a relatively high mortality regardless of the type of treatment instituted. Other serious complications are hemorrhage, spread of the infection in the lungs, and abscesses elsewhere in the body. In the adult also the possibility of a carcinoma of the lung, either primary or secondary, must always be considered. Often the first symptoms of pulmonary carcinoma are those due to abscess. It will be seen, therefore, that no satisfactory conclusions can be drawn from any small series of cases treated according to any particular method.

In the last five years, Singer and I have treated 218 cases of pulmonary suppuration, exclusive of empyema and tuberculosis. Of this number, forty were in children under twelve years of age. Included in this number are cases of both acute and chronic suppuration. The methods of treatment with the results obtained are given in the accompanying table.

Methods of Treatment and Results Obtained

	Cases	Free from Cough	Died
Postural drainage and general measures	24	21	3*
Pneumothorax	2	2	.
Surgical drainage	2	2	.
Cautery pneumectomy	7	5	1†
Bronchoscopy for foreign body	4	3	0‡
Lobectomy	1	.	1
Total	40	33	5

* The fatal cases in this group all presented multiple abscesses of the lung or suppuration in other parts of the body.

† Three of these patients, although free from cough, have remaining bronchial fistulas. One patient died from hemorrhage on the tenth day after the cauterization, the only death from hemorrhage in thirty-one cases of radical cautery pneumectomy in both children and adults. One other patient of this series died a year after the cautery operation, supposedly from cerebral air embolism during an operation undertaken to close a bronchial fistula. He was free from cough and other symptoms at the time of the later operation, and for that reason this fatality is not included as a death due to the operation of cautery pneumectomy.

‡ One patient on whom bronchoscopy was performed for foreign body has not had much improvement in symptoms from the removal of the foreign body. At present he seems to be developing bronchiectasis. This series does not include a larger number of cases in which foreign bodies were removed before extensive suppuration had occurred. The bronchoscopists were Drs. M. F. Arbuckle and Arthur Proetz.

Of this series of forty cases of pulmonary suppuration, thirty-three patients, or 82.5 per cent, are free from cough and other symptoms. The mortality has been 12.5 per cent.

12. Hedblom, C. A.: Graded Extrapleural Thoracoplasty in the Treatment of Diffuse Unilateral Bronchiectasis, Arch. Surg. 8: 394 (Jan.) 1924.

13. Singer, J. J., and Graham, E. A.: The Treatment of Bilateral Lung Suppuration, Am. Rev. Tuberc. 13: 225, 1926.

14. Tuffier, quoted by Sauerbruch, F.: Chirurgie der Brustorgane, Berlin, Julius Springer 1: 569, 1920.

Essential Thrombopenia.—Recently a separate group of purpura has been described under the title of "Essential Thrombopenia" or "Thrombocytopenia." Frank, who is responsible for this, definitely stated that he considered the entity as identical with what has been described as purpura hemorrhagica in the past. It appears . . . that he includes grades far less severe than would have been classified clinically as purpura hemorrhagica. The justification of such an entity, therefore, cannot rest on the clinical manifestations and must depend on features in the blood. This is a question of special importance, since it is widely stated not only that splenectomy is indicated in this group, but that it should be performed in no other type. . . . The cases now being regarded as purpura hemorrhagica or essential thrombopenia are mainly those that in the past would have been regarded as severer or more chronic forms of purpura, but not of the severity which used to justify the term purpura hemorrhagica. —Tidy, H. L., *Lancet*, Aug. 21, 1926.

CARDIAC ASTHMA*

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Cardiac asthma may be defined as a paroxysmal dyspnea, developing suddenly while the patient is at rest, accompanied by a sense of suffocation and occurring in organic heart disease. The attacks of dyspnea are often associated with definite signs of acute cardiac weakness.

The term cardiac asthma has unfortunately sometimes been used as a synonym for the ordinary dyspnea of cardiac failure and sometimes for Cheyne-Stokes breathing. Objection was made by Sir Clifford Allbutt [1] to the employment of the term asthma for the attacks under consideration. "Asthma," he says, "is not a cardiac affection at all, and is not to be confounded with affairs primarily of the heart or circulation." He preferred the designation paroxysmal dyspnea of high blood pressure for the disease or symptom complex. The Greek word asthma, however, was used in the Iliad in the sense of an oppression, and, as thoracic oppression is a characteristic feature of the paroxysmal dyspnea of cardiac disease, the use of the term asthma certainly has some etymological justification.[2] Some attacks of cardiac asthma resemble bronchial asthma closely, even to the expiratory type of dyspnea and are, as a matter of fact, often mistaken for the latter by physicians as well as laymen. Heberden,[3] who gave the first detailed description of angina pectoris, describes in his commentaries, under asthma a case in which he recognized that the attacks were due to heart disease. I do not see how any one who uses the term angina pectoris can criticize the employment of the designation cardiac asthma with any show of consistency. Angina is a word applied to other conditions quite unrelated to heart pain, and the expression angina pectoris lacks any reference to the heart. Stenocardia is a more accurate designation for the symptom complex known as angina pectoris, yet how rarely is it used today. As the name cardiac asthma has been employed in French, English and German medical literature for about a hundred years to designate paroxysmal attacks of disturbed breathing in heart disease, it has probably come to stay, whether or not it is objectionable, as Sir Clifford Allbutt thought.

Hope [4] seems to have introduced the term cardiac asthma into English medicine. In his book on diseases of the heart, he has a chapter devoted to what he called cardiac asthma. He describes well a typical attack, but the clinical picture he drew of the condition is obscured by including under the designation of cardiac asthma the continuous dyspnea of far advanced heart failure and seizures of what were undoubtedly Cheyne-Stokes breathing, a condition in which the patient has no respiratory distress.

William Stokes,[5] in his textbook on heart disease, speaks of cardiac asthma as a definite clinical condition. He goes on to say that the disease, which in Ireland most often gets the name of angina pectoris, might be more properly designated as cardiac asthma. The two cases of cardiac asthma he reports in his book are atypical. Doubtless, coronary endarteritis and cardiosclerosis were very rare in Ireland, or Stokes, one of the best clinical observers of his age, would have given us vivid pictures of both angina pectoris and cardiac asthma. It seems extraordinary, but he states that he never saw a case of classic angina pectoris as described by Heberden and Latham.

The symptom complex known as cardiac asthma has received surprisingly little attention from American writers. The term cardiac asthma does not appear in Osler's textbook of medicine; the definite clinical condition is not described under any other name, nor is it included in Osler and McCrae's System of Medicine. In a brief statement on the pulmonary features of angina pectoris, Osler and McCrae [6] undoubtedly refer to the mixed form of cardiac asthma and angina pectoris. But in Osler's lectures on angina pectoris, both in the first series [7] and the Lumleian lectures,[8] he describes the attacks of paroxysmal dyspnea as a respiratory form of angina. In the latter lectures, he reports in detail a number of cases he had personally observed. In describing a typical case in a woman, aged 54, that was studied in his wards at Johns Hopkins, he says: "We often discussed the character of the paroxysm, as it was suggested that she might have had asthma previously. In the suddenness of the onset and the rapidity with which the attacks came on, the limited duration and prolonged expiration suggested bronchial asthma." It seems to me that such a condition due to heart disease as he here describes is most appropriately called cardiac asthma.

Sir James Mackenzie was the first of our generation in England or America to realize the importance of cardiac asthma as a clinical entity. Sir Clifford Allbutt, in a letter to Dr. George A. Gibson, read in a discussion on asthma at a meeting of the British Medical Association in 1911, referred to those who used the term cardiac asthma as "slovenly people" for their lack of precision in the use of terms. This lead Mackenzie to engage in a lively polemic against Allbutt in the columns of the *British Medical Journal*. Mackenzie [9] defended the employment of the term with vigor and success. "I have seen only a few cases during an attack," he says in one of his letters to the editor, "and those I saw when I was engaged in general practice and was summoned in the middle of the night because of the patient's distress. Sir Clifford Allbutt puts forward the suggestion that it is possible he may never have seen such a case, and I am inclined to think that this is probably the reason why he disagrees with the term cardiac asthma." It is, as Mackenzie intimates, a symptom complex that can be best studied by the general practitioner. Here is an opportunity for clinical research open to every family physician, as careful observations of attacks of cardiac asthma at the bedside in the patients' homes are all too few.

I think that Mackenzie's clear statements of what he has learned from personal observation must have made some impression on Allbutt. At any rate, it was not long after these letters were written that he had an opportunity of observing an attack, and in his book

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* Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Allbutt, Clifford: Diseases of the Arteries Including Angina Pectoris, London **2**: 315, 1913.
2. Hoffmann, F. A.: Asthma cardiale, Die deutsche Klinik, part 2, Erkrankungen des Herzens, Berlin and Vienna **4**: 37, 1907.
3. Heberden, W.: Commentaries on the History and Cure of Disease, ed. 2, London, 1803, p. 68.
4. Hope, J.: A Treatise on the Diseases of the Heart, ed. 3, London, 1839, p. 393.
5. Stokes, William: The Diseases of the Heart and the Aorta, Philadelphia, 1854.
6. Osler, William; and McCrae, Thomas: The Principles and Practice of Medicine, ed. 10, New York, 1925, p. 859.
7. Osler, William: Lectures on Angina Pectoris and Allied States, New York, 1901, p. 80.
8. Osler, William: The Lumleian Lectures on Angina Pectoris, reprinted from the Lancet, March 12 and 26, and April 9, 1910, p. 17.
9. Mackenzie, James: Cardiac Asthma, Brit. M. J. **2**: 1231, 1911.

on angina pectoris, published in 1915, he gives us one of the best descriptions of the paroxysm of severe cardiac asthma to be found anywhere.

He [10] says:

I see again, with the vividness of life, the desperate conflict of a strong man with a paroxysm of suffocation which recently some of us witnessed in a hospital ward, during an examination. The patient, seized and throttled before he could cry out, sprang up livid to wrestle with death. The desperate conflict made the enemy almost visible to us. Now this way, now that, springing up in bed to fight from the edge of it, to sink back in utter exhaustion, but only to rise again panting with the sweat streaming from him, desperately to renew the battle, the scene was almost as distressing to the bystanders as to the victim. Some one exclaimed, "Angina pectoris." Thoracic agony it was indeed, but dyspnea is not a character of angina pectoris. The attack, akin as such attacks may be to the paroxysmal dyspnea of Bright's disease, was in this case, as it may be in Bright's disease, a paroxysm of high pressure dyspnea. His heart was laboring and hypertrophied, the arteries thick and the arterial pressure very high.

In a thorough study of sixty-three cases of syphilitic aortitis, Longcope [11] obtained a history of attacks of paroxysmal dyspnea (cardiac asthma) in nine cases. He observed a number of the attacks in different patients, and the following description of one of them was recorded at the bedside:

Suddenly during rounds at 10:40, the patient showed signs of great distress. He sat up in bed and gave a sharp agonizing cry for help. Going immediately to the bedside he was found sitting up, leaning forward with a pained, anxious expression, and showing the most marked dyspnea. He implored us to relieve him of his distress, but talked quite intelligently throughout the attack, and said there was no actual pain, but terrific difficulty in getting his breath. The supraclavicular spaces were retracted during inspiration; the chest moved scarcely at all, while the respiratory excursions of the diaphragm were extreme. Respiration was rapid, and though inspiration seemed difficult, expiration was accompanied with the greatest effort and exertion, and was comparatively much prolonged. The pulse was 120. The chest was hyperresonant, and on auscultation were heard diffusely scattered sibilant and occasional crackling râles. About the height of the attack the patient began to sweat about the head and face. At this time, too, he began to cough and expectorate a small quantity of thick, blood-stained mucus.

My interest in cardiac asthma was aroused by Krehl, when a student in his Tübingen clinic in 1902. He had at that time written for Nothnagel's System, in his monograph [12] on diseases of the myocardium, one of the best accounts of cardiac asthma to be found in the literature. A few years later, in 1908, I received help and encouragement in the study of this condition from the late Sir James Mackenzie, which I gratefully acknowledge. I have analyzed a series of 366 cardiac cases seen in private practice in which I myself recorded the anamnesis and made the physical examination. I have selected for study all the cases in which a history of attacks of paroxysmal dyspnea was obtained. In fifty-three of the series, there was no organic disease of the heart or kidneys. These comprised cases of cardiac neurosis, physiologic arrhythmias and physiologic murmurs. In three of these there were attacks of paroxysmal dyspnea, but all unattended with oppression or any real sense of suffocation. They were evidently of a neurotic nature and should not be confounded with cardiac asthma. Among the 313 cases of organic heart disease was one case of paroxysmal dyspnea, with attacks coming on when the patient was at rest, but without any distress. The patient, a nervous woman, did have mitral stenosis in addition to a vasomotor neurosis. The case belongs likewise in the group of paroxysmal dyspnea of nervous origin, making a total of four among 366 patients. In considering the cases that should be classed as true cardiac asthma, I have excluded (1) paroxysms of breathlessness brought on by exertion, and (2) attacks of increased dyspnea in orthopneic patients with advanced heart failure.

There were thirty-nine patients with a history of paroxysmal dyspnea with oppression or sense of suffocation. These I regard as examples of true cardiac asthma. It is at once apparent that this condition has been a not uncommon occurrence in my clinical experience, as thirty-nine cases in a series of 313 cardiac cases is 12 per cent.

Thirty-six of these thirty-nine cases of cardiac asthma were in patients in which the diagnosis of the senile heart or cardiosclerosis was made. Under other systems of classification, they would be grouped as cases of chronic myocarditis, hypertensive cardiovascular disease, myocardial degeneration or coronary endarteritis. Only two of the cases were in patients with rheumatic heart disease; both had aortic insufficiency. There was one case of syphilitic aortitis, but there were only five cases of syphilitic disease of the heart or aorta in the entire series of 313. Hence, one case is equal to 20 per cent, which is higher than the incidence in Longcope's series of sixty-three cases of syphilitic aortitis, in which cardiac asthma occurred in nine, or 14 per cent.

TYPES OF CARDIAC ASTHMA

The cases can be divided into four groups:

1. Pure cardiac asthma. In this group, a subdivision is made into the mild and severe cases. The latter consist of agonizing attacks of suffocation, often associated with a sense of impending death. These attacks are fortunately much rarer than the mild attacks, which are often mistaken for bronchial asthma.

2. Mixed anginous form—cardiac asthma with angina pectoris. In pure angina pectoris, there is no embarrassment in breathing, as Heberden pointed out in his original description of the disease, and in pure cardiac asthma no pain. Attacks are not uncommon that may be regarded by one observer as angina pectoris with dyspnea and by another as cardiac asthma with pain.

3. Mixed edematous form—cardiac asthma with pulmonary edema. Some attacks of cardiac asthma end in pulmonary edema. There is evidently a close relationship between the two conditions. I have notes of two cases of cardiac asthma without angina, in which the expectoration of a considerable amount of thin, frothy fluid occurred in one or more of the severe attacks.

4. The combined form—cardiac asthma with both angina and pulmonary edema. In six cases, attacks occurred of urgent dyspnea, severe pain in the chest, and cough with thin, frothy sputum.

DESCRIPTION OF A SEVERE ATTACK

I have notes on nine attacks of cardiac asthma that I have seen in six patients. In four the attacks were severe, and in two relatively mild. Each case differed

10. Allbutt, Clifford: Diseases of the Arteries Including Angina Pectoris, London 1: 401, 1915.
11. Longcope, W. T.: Syphilitic Aortitis: Its Diagnosis and Treatment, Arch. Int. Med. 11: 26 (Jan.) 1913.
12. Krehl, L.: Die Erkrankungen des Herzmuskels und die nervösen Herzkrankheiten, Vienna, 1901, pp. 116-120.

from the others in certain details. In the attack I shall describe, the paroxysm did not simulate bronchial asthma closely. The same patient later had a typical attack of less severity, with sonorous râles over both lungs, which was mistaken for ordinary asthma by the well trained physician who examined him. Previous attacks had been regarded by his earlier physicians as bronchial asthma. I select it, however, as an excellent example of the severest form of paroxysmal dyspnea, in which death seemed imminent:

W. W. C., a man, aged 66, awoke about 11:30 p. m., March 2, 1925, with urgent dyspnea. I saw him at 1 o'clock. He was sitting up in bed, struggling for breath. His face was somewhat cyanotic. Every few minutes he would throw himself about the bed in his agony. "It is hell," he gasped. He thought he was dying and begged for relief from the awful feeling of suffocation. His head and body were covered with cold sweat, and the skin was rather cool. The respirations were labored, 32 to the minute. There were loud tracheal râles, audible at a distance, and there was apparently considerable secretion in the throat, but he did not cough or raise any sputum. The radial pulse was full, regular, of good tension and 120 to the minute. No cardiac impulse could be felt. (When he was last examined in my consulting room, February 24, there had been a marked heaving impulse over the lower half of the left front of the chest.) The heart sounds could not be heard with the ear to the chest or with a stethoscope. There was good resonance over the lungs and no râles. Before examining him, I gave one-fourth grain (16 mg.) of morphine subcutaneously and repeated the dose ten minutes later. Relief from the distress was obtained in about twenty minutes after the second injection. He dropped off to sleep for a few minutes before I left him, and the respirations fell to 20.

TABLE 1.—*Blood Pressure During Severe Attack of Cardiac Asthma, April 15*

Time	Pulse	Blood Pressure: Systolic, Mm. Hg	Blood Pressure: Diastolic, Mm. Hg	Comment
11:50 a.m.	152	200	170	Orthopnea and cyanosis; skin moist and cold
11:53	...	...	...	0.7 cc. epinephrine subcutaneously
11:55	128	210	170	
11:59	...	...	...	Respirations, 34; breathing wheezy; gurgling in throat
12:01 p.m.	148	...	...	Cough; a little bloody sputum
12:03	...	190	160	
12:06	...	194	156	17 mg. morphine sulphate subcutaneously
12:07	136	...	...	
12:08	...	182	148	More comfortable
12:09	128	...	...	
12:11	...	206	140	
12:12	128	...	...	
12:14	...	170	142	
12:16	...	182	...	Blood pressure by palpatory method, no sound over brachial artery
12:17	...	190	140	
12:18	...	...	...	First heart sound not heard; pulmonary second sound not accentuated; sonorous râles over lungs
12:19	...	...	...	Respirations, 25; face and hands cyanotic
6:10	104	168	126	Respirations, 16; comfortable

The following morning, he felt quite comfortable. He had slept from 1:45 to 6 a. m. Respirations were 20; the pulse was 92, regular and with good volume.

The following events immediately preceded the severe attack: For three or four days he had what he called a cold. The only symptom, however, was gurgling sounds in the throat. The night of March 1, he awoke about 4 a. m. and was a little breathless. He did not have to elevate his head, which was supported by two thin pillows as usual. March 2, he painted in his studio about an hour and a half, but during the day was conscious of a little difficulty in breathing. This increased before dinner and he felt quite uncomfortable, but after dinner he had less dyspnea. He went to bed at 10 o'clock and promptly fell asleep. He was awakened by shortness of breath about 11:30. He sat up in bed. The dyspnea increased. There was intense suffocation, but no pain. He felt as if he were drowning. He rolled from side to side. It was agonizing. He could not imagine anything much worse.

April 15, 1925, he was suddenly seized about 11:30 in the forenoon with urgent dyspnea. He had been kept at rest in the New England Baptist Hospital since the attack on the night of March 2. I saw him shortly after the onset of the seizure. Although a severe attack, the suffocation was less than in the previous one, and this paroxysm resembled bronchial asthma. His blood pressure taken repeatedly during the previous six months had averaged about 160 mm. systolic and 100 mm. diastolic. The last observation was made, March 10, when the systolic pressure was 146 mm. The record of blood pressure during a severe attack is given in table 1.

On the following morning when I saw him, his breathing was easy. He had had a good night. The systolic blood was 137 mm. and the diastolic 124 (the average of four determinations). In the early morning of April 21, he had another attack that I witnessed. There was orthopnea, labored breathing, and loud tracheal râles. Cyanosis was present, especially marked over the body; there was some sweating; the skin was cold and the pulse regular.

The respirations at 4:34 a. m. were 28. At 5 a. m., he was given 0.7 mg. of strophanthin (Böhringer's) intravenously. The dyspnea ceased at about this time. He never had any more attacks. May 9, 1925, the next observation of the blood pressure was recorded. The systolic pressure was 186, and the diastolic, 112; the pulse was 76 and regular. Dyspnea, on moderate exertion such as climbing stairs or walking on the level, never developed. He died suddenly at the breakfast table in February, 1926. The duration of life after the first attack of cardiac asthma was two years.

In the case of W. R. C., seen with Dr. C. S. Millet of Brockton, during an attack of moderate severity, the systolic blood pressure rose above 200 and the diastolic to 170. The diastolic pressure was then at a higher level than the systolic had averaged prior to the attack.

In a patient of Dr. T. F. Rock of Nashua, the rise of systolic blood pressure during a mild attack was only 20 above the previous level, and the diastolic pressure did not exceed 110.

In the case of S. G., seen with Dr. H. Morrison in Roxbury, during a paroxysm of long duration, the blood pressure was abnormally low, the systolic being 105 and the diastolic, 63.

TABLE 2.—*Blood Pressure During Attack of Cardiac Asthma, April 21*

Time	Pulse	Blood Pressure: Systolic, Mm. Hg	Blood Pressure: Diastolic, Mm. Hg
4:28 a. m.	...	200	150
4:30	124	...	...
4:34	...	200	150
4:50	128	...	...
1:30 p. m.	100	182	120

A marked elevation of the blood pressure in attacks of cardiac asthma has been observed previously. Osler states that in some of his patients the systolic pressure rose to 340 mm. In the attack observed by Longcope occurring in syphilitic aortic insufficiency, the systolic blood pressure rose from 200 to 247 mm. The diastolic pressure before the seizure was 70 mm., and did not change during the attack. A similar rise may occur in acute edema of the lungs. Amblard [13] has reported four cases in which the systolic pressure rose to 280, 270, 250 and 240, and the diastolic to 210, 190, 180 and 160. As is well known, the blood pressure in angina pectoris also tends to increase during attacks.

13. Amblard, L. A.: La tension artérielle dans l'oedeme aigu du poumon, Presse méd. 19:657 (Aug. 12) 1911.

DESCRIPTION OF A MILD ATTACK

The patient, usually a man and more than 60 years of age, goes to bed feeling perfectly well. He may have had slight breathlessness or substernal pain on exertion, for some time, possibly six months or more, but as a rule of slight degree, so that he has paid no attention to his symptoms.[14] He sleeps soundly until he is suddenly awakened by a sense of suffocation and oppression, which causes him to spring upright in bed, and if it persists he sits on the side of the bed, or gets up and walks to an open window. The breathing is labored, and the feeling that he cannot get air into his chest continues. In a few minutes the attack may cease or he begins to cough. The breathing is often wheezy. The cough is at first dry, but after a short time a little thick mucus is raised, which is occasionally tinged with blood. Cyanosis has been noted only in the severe attacks. There may be an ashy pallor instead of cyanosis. The breathing at length becomes easier, and soon afterward the breathlessness entirely disappears. He is able to return to bed and sleeps fairly well with the head low the remainder of the night. The average duration of an initial mild attack is thirty minutes. Including all twenty-six cases of which I have a note on the length of the attack, mild as well as very severe, the average duration was one hour.

TABLE 3.—*Age of Patients at Onset of Cardiac Failure*

Years	Number of Cases
From 1 to 40	0
41 to 50	5
51 to 60	9
61 to 70	19
71 to 80	5
81 to 90	1
	39

EQUIVALENTS OF CARDIAC ASTHMA

Paroxysmal Nocturnal Cough.—I have seen a case occurring in organic heart disease. It was the first symptom of heart failure. The patient, aged 48, had cardiosclerosis, with definite enlargement of the left ventricle. He was seen with Dr. J. S. McLester in Birmingham. He had had many attacks, all at night, awakening him from sound sleep. There was no breathlessness and no chest pain during the seizures. There was no sputum. The lungs were normal. Rest in bed, together with digitalis and the Karrel diet, was followed by a cessation of the attacks.

Paroxysmal Nocturnal Anxiety.—Two cases fall into this classification. Both patients were awakened night after night by a sense of indefinite anxiety, and felt impelled to spring out of bed. There was no pain, cough, breathlessness or sense of suffocation. After a short interval, from five to fifteen minutes, they were able to go back to bed, and soon fell asleep.

These two unusual types of nocturnal paroxysms have not been included in my series of cardiac asthma cases, but I feel that they are closely related to it. In both, as in cardiac asthma, the attacks are paroxysmal and nocturnal. In both, the upright position is assumed instinctively. Cough, the symptom of the first, is common in cardiac asthma. Anxiety and restlessness, the symptoms in the second group, are constantly present in severe cardiac asthma.

14. In thirteen of thirty-nine cases, 33⅓ per cent had no symptoms referable to the heart prior to the initial attack of cardiac asthma.

ETIOLOGY

Age.—The relation that age bears to the occurrence of cardiac asthma, as shown in table 3, in nonsyphilitic cases is interesting and suggests most strongly the causal relation arteriosclerosis bears to the symptom complex.

Sex.—The condition is more commonly encountered in men than in women. In the present series there were twenty-eight males and eleven females.

Relation to Angina Pectoris.—Fifteen of these thirty-nine patients had attacks of angina pectoris in addition to cardiac asthma at some stage of their illness, and eight had anginal pains during attacks of cardiac asthma. Although the relationship of cardiac asthma and angina pectoris seems undoubted, it is important to emphasize that in the records of twenty-eight of the cases it is definitely stated that the patients had no pain in the attacks of paroxysmal dyspnea.

Relation to Hypertonia.—In eighteen of thirty cases of which I have a record of the systolic blood pressure, or 60 per cent, it was above 150, and in eleven, above 180. It is probable that in some of my patients with advanced cardiac failure in whom the systolic blood pressure was below 140, it had previously been at a higher level. The diastolic pressure was above 100 in seventeen of twenty-three cases. Two of the patients with a diastolic pressure below 100 had aortic insufficiency.

Relation to Renal Insufficiency.—The high blood pressure in my cases was apparently due to primary hypertonia. In no case was there any severe disturbance of renal function. The idea that the condition I am describing is often renal rather than cardiac asthma seems rather widely held. The evidence here presented and a recent review[15] of the literature offer no support for the theory that nocturnal paroxysmal dyspnea is frequently a uremic manifestation.

Relation to Cardiac Dilatation.—In twenty-eight of the cases, the physical examination indicated that the heart was enlarged to the left. In only two cases was there evidence of enlargement to the right. In twenty-four cases, symptoms or signs of cardiac weakness existed at the time of the examination.

Pathogenesis.—The exact cause of cardiac asthma is unknown. Why should the victim be seized with violent breathlessness while quietly sleeping when he has been able to engage in the regular exertion of daily life without any discomfort? This is a question that has not been satisfactorily answered. The initial paroxysm was nocturnal in twenty-nine of thirty-two cases, and one of the remaining three belongs in the same category, as the attack came on at 6:30 a. m., before the patient had left his bed. In 94 per cent the initial seizure occurred when the patient was quiet in bed. It differs from ordinary cardiac dyspnea in another way: In an attack of cardiac asthma, the patient seems instinctively to move his body, seeking relief, while in ordinary cardiac dyspnea, he keeps as quiet as possible after having assumed the position in which he can breathe with the least discomfort.

In discussing the causation of this condition, we are treading a dangerous ground, as quagmires of speculation lie all about us. It is evident, however, that cardiac asthma is in some way closely related to arteriosclerosis, syphilitic aortitis, angina pectoris and aortic

15. Eppinger, H.; Von Papp, L., and Schwarz, H.: Ueber das Asthma cardiale, Berlin, 1924.

insufficiency. It does occur, very rarely if at all, in connection with mitral disease, or rheumatic myocarditis, acute or chronic. Now, cardiosclerosis, angina pectoris and syphilitic aortitis have at least one thing in common, and that is the frequency of associated disease of the coronary arteries.

Cardiac asthma usually develops in patients who have a dilatation of the left ventricle and arterial hypertension. It has been thought by Krehl and many others that the attacks are due to a sudden temporary failure of the contractile power of the left ventricle, and probably they are. But, if that were the sole cause, it would scarcely explain the startling suddenness of dyspnea of great intensity and the elevated systemic blood pressure. When sudden failure of the left ventricle occurs, as in coronary thrombosis, the dyspnea is usually less sudden in its onset and less severe. Furthermore, the blood pressure falls in coronary thrombosis. Nervous influences are certainly at work in the production of cardiac asthma. There are undoubtedly peripheral factors to be considered. The high blood pressure, the profuse sweating, the cold skin indicate a vasomotor disturbance in the peripheral circulation. It has been recently shown by Eppinger, von Papp and Schwarz [15] that, in some cases (four out of six studied by them) the blood flow from the arteries to the veins is increased during attacks of cardiac asthma. In addition there may be an actual bronchial spasm, as Mackenzie thinks, a reflex disturbance produced in some way by the weakened heart.

There is evidently, as my observations show, an intimate relation existing between angina pectoris, pulmonary edema and cardiac asthma.

Prognosis.—Most of the patients that I saw had attacks of cardiac asthma for only a few months at the time I examined them. This short duration of the disease in such a fairly large series of cases has a sinister significance, for most of the patients die within two years after their original seizure, and many die within a year. On the other hand, a few may live considerably longer. Two in this series lived ten years after the first attack. Death in an attack is relatively rare.

Treatment.—Benefit in attacks has apparently been obtained sometimes from glyceryl trinitrate, amyl nitrite, epinephrine and caffeine sodiobenzoate. There is a possibility of danger in the use of epinephrine, as death has occurred a few minutes after its administration in two cases to my knowledge. Morphine given subcutaneously in a goodly dose (one-fourth grain, or 16 mg.) is by far the best remedy for a severe attack. This may well be followed, if the patient has not had digitalis for four or five days, by strophanthin, 0.5 mg., intravenously. It is asserted that bandaging the limbs shortens the paroxysm.[15] Bleeding (from 500 to 700 cc.) is recommended if life seems threatened and the blood pressure is high.

There is no doubt that the occurrence of a single attack, even if the patient has apparently been in vigorous health, is a signal of grave disease of the heart muscle and should be treated accordingly. The patient should be given strict bed rest, in my opinion, for from six to eight weeks, or longer. Continued digitalization is of possible value in the prevention of recurrent attacks.

CONCLUSION

The statement regarding angina pectoris made by Dr. Latham nearly a hundred years ago applies to cardiac asthma today. "The idea of it cannot be made to rest in any definite form of disease beyond these. We are sure of what it is as an assemblage of symptoms. We are not sure of what it is as a disease." Our knowledge of it stops short with the symptoms, and these I have presented.

270 Commonwealth Avenue.

THE BEDSIDE STUDY OF AIR HUNGER *

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A great scientist said, "The last thing a deep sea fish would discover is water," an apothem which pointedly expresses the idea that we must transcend our most intimate contacts before we can comprehend them. This is literally true in the history of science, for scientific study of the heavens and the earth long preceded scientific study of the air, and only the most recent studies in medicine have been concerned about the medium in which we live and our adjustments to it. Respiration is such a nicely directed function and our respiratory need is so exquisitely balanced with our breathing mechanism that, until recent years, physicians were contented with the observation that there was a disturbed relation between these two factors, but analysis of the disturbance seemed superfluous, because the phenomenon was too obvious.

Now that chemical research has revealed so much concerning respiration, clinicians should aspire from objective studies of patients to predict what are the carbon dioxide and oxygen relations in the ventilating air with circulating blood, and also the relation between the automatic respiratory center and its oxygen supply. It is my purpose to show that bedside observations should enable us to recognize the kind of disturbance that has occurred in either the internal or external respiration that produces the symptom.

By air hunger is meant the subjective experience of air want. Dyspnea, tachypnea, hyperpnea and cyanosis are attendant phenomena and can be evaluated by objective observation, but the feeling of air hunger is what alarms the patient and leads him to seek medical aid. The physician is called for a single reason and that is to relieve air hunger, a subjective symptom that always is alarming to the patient. The symptom may be due to a misinterpretation of a nervous experience that very commonly plagues introspective persons, although their internal and external respiration is quite normal.

Genuine air hunger may originate from disturbances in the nerve supply to the lung; or there may be disturbances in the cardiorespiratory function, or internal respiration may be disturbed by alteration of the chemical composition of the blood or by disturbances in the lymph or blood supply to the respiratory center.

The most common exhibition of air hunger is associated with cardiorespiratory disease, and as the cardiac and respiratory functions are interdependent, our first problem is to learn how much each may share in producing the symptom.

In elderly persons, we most often have the problem to determine, for therapeutic reasons, whether air hunger has a cardiac or a pulmonary origin. Obviously,

* From the Department of Medicine of Western Reserve University at the Lakeside Hospital.
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if air hunger is due to pulmonary stasis, cardiac stimulation is indicated. If lung ventilation is at fault, our problem is different.

An old bronchitis with emphysema complicated by myocardial incompetence may offer some difficulty in disentangling the cardiac from the pulmonary sources for air hunger. In such a patient we have in addition to air hunger the signs of dyspnea and cyanosis. How can we dissociate the symptoms of circulatory from respiratory impairment

If the air hunger, dyspnea and cyanosis are due to cardiac incompetence, there must be a great reduction in the cardiac output. What evidence betrays the impairment in mass movement of blood as the source? If the body surface is warm, we can safely exclude cardiac failure as the source for the pulmonary signs. With incompetent cardiac output, the surface supply of blood is reduced, and therefore cooling of the skin is always perceptible to the examiner's hand. Warm cyanotic fingers in a patient means aortic anoxemia that is not due to impaired cardiac output. In cardiac failure the fingers are cold and cyanotic, and the cyanosis is peripheral in origin.

At Lakeside Hospital, Dr. Leas has devised a method by which he can measure the total heat loss from the lungs. By this method he has proved that in a normal person about 10 per cent of the total heat loss is by way of the lungs, but in cardiac stasis the percentage of total heat loss by way of the lungs may mount to 25 or even 30. This increase of proportional heat loss by way of the lungs simply means a lessened radiation from the body surface and an increased heat loss by radiation and vaporization of water by way of the lungs. To evaluate this shifting of heat loss requires considerable time and effort, but the procedure of perceiving the evidence for lessened radiation from the surface by applying the hand is so simple that its significance has been quite forgotten. Of course, there may be a cold body surface without cardiac stasis, and there may also be moderate cardiac incompetence with a body surface that is not strikingly cool; but a warm body surface does not occur in the presence of pulmonary edema and cyanosis due to cardiac incompetence.

This idea is important because patients who have bronchitis, emphysema and aortic anoxemia acquire globular cardiac enlargements in which the left and right ventricles equally partake. But in the presence of emphysema, estimation of the heart's size by percussion may be impossible if the patient is lying down. In this situation, we have recourse to the contour of the arch of the diaphragm, which gives us very dependable information.

If there is inspiratory narrowing of the subcostal angle and the lateral portions of the costal borders move laterad in inspiration, we can be quite sure that the moisture in the air spaces and the cyanosis are not due to emphysema, for emphysema severe enough to cause cyanosis will always cause sufficient flattening of the leaves of the diaphragm so that the entire costal margins will move mediad during inspiration.

If the inner portions of the costal margins move mediad and the outer portions laterad, the cyanosis will be found to be due either to cardiac stasis or to an extensive disease of the respiratory membrane which interferes with the transpiration of gases between the ventilating air and circulating blood. In other words, the cyanosis is not due to impaired ventilation of the lung, but to impaired ventilation of the blood.

This method of clinical logic is confirmed by other methods. A man, aged 45, had dyspnea and cyanosis, with hippocratic finger ends. The vital capacity was 1,500 cc. and normally should have been 4,000 cc. There was marked impairment of extensibility of the lungs, and there was also emphysema, as shown by the low position of the lung borders. When the patient was lying down, the inner halves of the costal margins moved mediad and the outer halves laterad. On this evidence we were led to infer that emphysema could not be the cause of the cyanosis, and, on the other hand, in spite of the enlarged heart, stasis could not be the cause of the bronchial moisture and rigidity of the lungs.

The coexistence of warm hands, cyanosis, rigid lungs, enlarged heart and moderate emphysema enabled one to postulate that the primary lesion was a diffuse interstitial pulmonary disease which produced an extensive disease of the respiratory membrane and that therefore there should be a disparity between the oxygen content of the alveolar air and the aortic blood. Furthermore, one could postulate that the mass movement of blood through the lungs should be normal. In fact, every clinical sign could be explained by an inadequate transpiration of gases between the ventilating air and circulating blood. Confirmation of this view was obtained by the carbon dioxide content of the alveolar air. Instead of being high as is always found when emphysema causes aortic anoxemia, this man's carbon dioxide content was only 4.5 per cent, which is lower than normal.

When a voluminous emphysema from its impairment of lung ventilation causes cyanosis, we find the carbon dioxide and oxygen contents of the alveolar air to measure their content in the aortic blood. The alveolar air gases balance those of the aortic blood. When the degree of emphysema is large enough to cause aortic anoxemia that is plainly visible as cyanosis, the lungs are large enough to flatten the diaphragm sufficiently to give it the mastery of the costal borders, so that with inspiration the entire costal margins of both sides move mediad during inspiration. But in our patient, only the subcardial diaphragm was flattened sufficiently to change the direction of movement of the inner portions of the costal borders to which it is attached. The outer halves of the costal margins moved laterad, because the degree of emphysema was insufficient to give the leaves of the diaphragm the mastery over the intercostal muscles in determining the direction of costal border movements. When the carbon dioxide content of the patient's alveolar air was determined, it was found to be only 4.5 per cent, whereas in emphysema severe enough to produce cyanosis, the carbon dioxide alveolar content would have been certainly as high as 7 per cent.

The fact that this man's alveolar carbon dioxide was below normal and that his blood was cyanotic proved that the respiratory defect lay in the respiratory membrane that intervenes between the alveolar air and the circulating blood. The blood circulation was not defective, because the hands were warm and the minute volume flow determined by the ethyl iodide method of Yandell Henderson proved to be 8 liters. The physical signs in this patient revealed the whole functional change. From the physical signs, we were enabled to prove that there was a diffuse interstitial disease of the lung that resulted in moderate emphysema and impaired transpiration of gases between the ventilating air and the circulating blood; we could also prove that both

chambers of the heart were enlarged on account of chronic anoxemia, but they maintained a normal minute volume flow of blood. All these deductions were based on the observations that the body surface was warm, and on the contour of the phrenic arch in its subcardial and lateral portions. The contour of the diaphragm portrayed the nature and degree of cardiac enlargement and indicated the kind of pulmonary defect that caused the aortic anoxemia.

PAROXYSMAL TACHYPNEA

Paroxysmal tachypnea, a very unusual symptom of which I have seen six cases, occurred in the course of mediastinal disease which in two cases was associated with unmistakable syphilitic disease and syphilitic aortitis. Two were cases in which either syphilis or tuberculous disease was the cause, as both diseases were present, and two patients were tuberculous. The attacks in one patient were always associated with bradycardia. When the attacks came on, the heart rate would first drop from 80 to 40, and after a few of the slowed cycles the respiratory rate suddenly changed from 20 to 60 a minute. In none of the other patients did bradycardia occur. All the patients said they did not suffer from air hunger in the same way as after exercise. They had an irresistible impulse to breathe with great rapidity, and breathed with very shallow excursions, which were taken with the lung in the inspiratory phase. One patient, who also had asthma, early syphilitic disease of the spinal cord and blood spitting, had a respiratory rate during the attack of 76 a minute. One of my patients supposedly had asthmatic attacks with clearly proved pulmonary tuberculosis of one upper lobe; but when the attacks were described by the patient and his attending physician, they were clearly tachypneic and not asthmatic.

If one does not see the attacks they are likely to be passed over as asthma, for that is the only word patients know in relation to paroxysmal attacks of shortness of breath.

In spite of the very high respiratory rate, none of the patients superventilated their blood, because the excursions were very shallow. This striking symptom is apparently caused by some disturbance of the intrathoracic nerve supply to the lung; but what the mechanism may be is unknown, for our knowledge about the nature and results from irritative lesions of the sympathetic and parasympathetic nerve supply is not sufficient to explain this phenomenon. The only experimental evidence that offers even a suggestion is that of the Italian physiologist Baglioni, who many years ago found that stimulation of the pulmonary branch of the vagus in the dog caused slowing of the heart rate, with very rapid respirations while the lung was in the inspiratory phase.

PAROXYSMAL HYPERPNEA

I have seen only one case of paroxysmal hyperpnea:

A man, aged about 40, had had hemoptysis due to early tuberculosis of the lung. The paroxysms were associated with vasomotor constriction in the arteries of the arms. It was the disappearance of the pulse at the wrists at the same time the intense air hunger came on that led to his seeking hospital aid. The carotid and femoral distributions were unaffected, and the blood pressure measured in the leg rose only 10 mm. of mercury during the attacks. When the patient was first seen, the signs of lung tuberculosis were not at all clear, but the history was very suggestive and three years later the patient presented himself, with pronounced tuberculosis of both upper lobes of the lungs; the paroxysms of hyperpnea in the meantime had ceased.

At first, the attacks came on with severe exercise in which the arms were employed. One of the early attacks interrupted a boxing match in which the man was engaged. Later, numerous attacks came on with very moderate exercise in walking. If the patient lay prone on the floor and then raised his body by extending his arms while the palms of his hands were applied to the floor, an attack could be produced after this exercise was performed several times. Tetany never appeared, although there was certainly superventilation while the attacks lasted, for the patient breathed very rapidly and deeply, so that he gave a very good exhibition of forced breathing. There was not the slightest evidence for dyspnea. The large amount of ventilating air entered and left the lung without the least evidence for impairment in lung extensibility, and there was no evidence for any disturbance in the volume flow of blood.

Although the nervous mechanism that produced these attacks of hyperpnea in the presence of a normal blood chemical determination and normal external and internal respiration is quite beyond our knowledge of sympathetic and parasympathetic nerve supply to the lung, we are justified in assuming that the exciting cause was mediastinitis, because the patient had tuberculosis of the upper lobes of both lungs, and coincidently with the hyperpnea there was severe vasomotor constriction that was confined to the upper extremities.

SLUMBER APNEA AND WAKING HYPERPNEA

One conceivable source for slumber apnea is hypesthesia of the respiratory center due to its cellular deterioration from disease as seen in brain syphilis. Another source may be impaired blood supply to the center, as seen in arterial sclerosis. In both instances there is in the respiratory center a small margin of response which is further diminished by sleep. Consequently, apnea follows as the patient lapses into light slumber and, then, after periods that vary from twenty to seventy seconds, the mounting carbon dioxide arouses the respiratory center to activity which awakens the patient with air hunger. In myxedema, the functional changes are different, but produce the same symptom. The lower carbon dioxide production leaves a small margin for adequate stimulation of the respiratory center; consequently, with the further reduction of oxygen metabolism and the added hypesthesia of the center that occur in sleep, automatic respiration ceases for sufficient time until the mounting carbon dioxide production arouses the patient by air hunger. This form of air hunger is generally misapprehended, because the patient does not know that apnea preceded the moment of waking. The patient tells a story of waking suddenly with a sense of suffocation that compels him to sit up and breathe violently for a few minutes before the sense of air hunger is allayed. He may think he has nocturnal asthma, and unless the physician is critically inclined this interpretation is accepted. The phenomenon is always due either to a disturbance in the respiratory center, or to a lowered oxygen metabolism, as in myxedema.

CARDIOVASCULAR DISEASE

Cardiovascular disease is the most common cause, and waking hyperpnea may be the only symptom from which some patients will complain in the early stage of the disease. One of my patients was so much disturbed by this symptom that he was awakened as often as twenty times in a night. Although he had a competent heart that enabled him to perform vigorous exercise during the day, he had a marked elevation of blood pressure and hypertrophy of the left side of the

heart. His renal function was quite normal. Death occurred three years later from cardiac decompensation. Citrated caffeine in doses of 4 grains (0.26 Gm.), four times daily, has given more relief than any other treatment. The symptom rarely occurs in cerebrospinal syphilis, but in the absence of evidences of generalized arterial disease a hypesthesia of the sensory nucleus of the vagus should be suspected, and further evidences for syphilis of the central nervous system should be carefully sought. In view of the pathologic changes in syphilis of the central nervous system, it is surprising that the symptom is not a common occurrence, for I cannot conceive of a more favorable pathologic process for its production than meningo-angiitis syphilitica.

MYXEDEMA

Slumber apnea with waking hyperpnea was the symptom that led two patients with myxedema to seek medical aid. One had a large goiter, cardiac enlargement with rapid rate and arrhythmia, marked nervousness and severe edema with eczema of the lower extremities. The edema, cardiac enlargement, goiter and eczema and the waking hyperpnea all promptly disappeared with the administration of exsiccated thyroid (Thyroideum, U. S. P.). Another patient, a woman, had no goiter or cardiac enlargement. Her sole complaint was edema and weakness, and waking at night with air hunger. In fact, it was the slumber apnea and waking hyperpnea that led Dr. Christie of Lakeside Hospital to suspect a want of carbon dioxide production to be the cause of her waking with air hunger. No evidences for vascular, renal or central nervous disease could be found. The patient was then given thyro-iodine, and the edema promptly disappeared, and with it the waking air hunger at night.

The air hunger of diabetes and chronic nephritis will not be discussed, because they have been very much in evidence in medical literature for the last few years. Nor will any space be given to hysterical air hunger or the common neurosis of air hunger. There is, however, an interesting relation between air hunger and retention of body fluids that is sometimes seen in chronic cardiovascular disease. The real source of the air hunger is marked by the presence of symptoms that are likely to lead to an interpretation of blood stasis as the cause, when there is a perfectly competent volume flow of blood through the lungs. The patients have cardiac enlargement and retention of body fluids, two symptoms that are sure to make stasis an acceptable explanation for the air hunger. Retention of body fluids in old heart and vascular disease cannot always be explained as being the result of a failure of blood hydraulics or of renal incompetence. There are some cases in which the retention of body fluids can be explained only by some systemic change that binds the fluid to the body cells and does not release it to the circulating blood. This seems certainly to be the way in which retention of body fluids occurs in myxedema, for the patients may have no cardiac, vascular or renal symptoms, and the administration of thyro-iodine causes a brisk diuresis while the patient is rapidly restored to normal health. We do not understand the biologic chemical changes at the bottom of these symptoms or their recovery; nor do we understand the biologic process that causes the binding of water to the body cells in some cases of cardiovascular disease. So far as we can determine, there may be an adequate volume flow of blood, and the kidney proves to be quite competent to eliminate the water that is offered it by the renal circulation, but there is general anasarca.

When in chronic cardiovascular disease we find a warm body surface with general anasarca, air hunger and periodic breathing, we should not readily dispose of the whole problem as due to stasis and renal incompetence. There are good reasons for suspecting that the retention of body fluid is not due to either a lessened output of the heart or to renal incompetence. It is not questioned that insufficient output and renal incompetence from lessened volume flow through the kidney will adequately explain a large proportion of cases.

Improvement follows the use of some digitalis or theobromine preparation, and as the dropsy recedes the cardiectasis diminishes and the rate and volume of the pulse improve. But there are cases in which digitalis and caffeine in large doses are ineffectual, but with the administration of merbaphen (novasurol) by the intravenous method the dropsy recedes, air hunger ceases, and the pulse pressure, heart rate and size of the heart's chambers are unchanged. There is nothing demonstrable that enables us to say that the heart's output has been enlarged, and if this is true then the brisk diuresis cannot with any more reason be ascribed to an enlarged volume flow through the kidney than with the use of thyro-iodine in myxedema.

What reasons have we for saying that the release of the retained fluid is due to some chemical effect on the binding relations between body cells and the water of dropsy? The reasons are as follows:

The body surface is not cool and the proportion of heat loss by way of the lungs is the same before and after the diuresis. The volume flow, as estimated by Stewart's method, is the same before and after the dropsy has ceased. The volume of the heart is unchanged, so far as we can determine by locating its boundaries before and after the diuresis, but there are good reasons for believing that after the diuresis the heart is more competent, although its output is the same as before. How merbaphen serves as a diuretic is unexplained, but we can show that it is not due to any effect on the mass movement of blood, and there is no evidence to indicate a local effect on the kidney itself. Furthermore, there is no evidence to indicate that the retained water is bound to the proteins of the blood in such a manner that it cannot be released to the kidney filter. By exclusion, therefore, we are left only the idea that the water is bound to the body cells and is not released to the circulating blood. We have the analog of this conception in the retention of water in myxedema. The mystery is no greater in one instance than in the other, and the diuresis that follows the use of merbaphen is no less astonishing than the diuresis that follows the use of thyro-iodine in cases of myxedema.

All this argument is derived from the simple observation that there are occasional instances of air hunger attendant on dropsy in old cardiovascular disease in which the respiratory symptom is traceable to retention of fluids that cannot be accounted for by failure in the hydraulics of the circulation, and also that this pathologic condition should always be suspected when the body surface is warm, although cardiovascular disease lies at the bottom of all the symptoms. In such cases, therapy directed toward improvement of the cardiac output and to conservation of the kidney is futile, but in many such cases we are rewarded with a brisk diuresis and cessation of air hunger following the intravenous use of merbaphen.

ETHYL IODIDE METHOD FOR DETERMINING THE CIRCULATION

AS A FUNCTIONAL TEST OF THE HEART*

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An ideal function test of the heart should correlate the clinical condition of the patient with the amount of work he can do, and the amount of effective work the heart can do.

All too little attention has been given to a quantitative estimation of the work the patient can do and, when quantitative figures are obtained, the unmeasurable energy expended in maintaining the upright position is usually neglected. One of us (J. W. M.) has designed an ergometer that can be used while the patient is in the recumbent or semirecumbent position. This apparatus eliminates the waste of a rather large and variable amount of energy in maintaining posture, and is suitable for bedridden patients.

By effective work of the heart is meant roughly, the mean blood pressure in grams per square centimeter times the output of the heart in cubic centimeters. In cases of regurgitation or stenosis, the heart will of course do more work than will be shown by this formula, but, since this work is not physiologically effective in terms of the circulation, it need not receive our attention at present. Blood pressure is, of course, easily estimated, but much difficulty has been met in estimating the output of the heart in normal and pathologic human subjects.

The methods of approach more generally used at the present date for calculating the volume of the circulation per minute (the output of the heart) are (1) the application of the principle of Fick and (2) the calculation from the amount of some foreign gas taken up by the blood in a given time when the coefficient of distribution between air and blood is known.

The application of the Fick principle to man, with the various technics proposed by Haldane,[1] Henderson and Prince,[2] Burwell and Robinson,[3] and Field, Bock, Gildea and Lathrop,[4] is not altogether suitable for routine use. The difficulty lies mainly in procuring the actual amount of gases in the mixed venous blood during the various states of disease and activity of the human body. Then, too, the technic of many of the methods based on the Fick principle is laborious and time consuming, thus rendering their usefulness unlikely as a routine procedure.

The measurement of circulation with foreign gases apparently offers the ideal method of approach. Henderson and Haggard[5] use the term nonreacting gases for gases that enter and leave the blood by simple diffusion and are not changed during their stay in the tissues. Reacting gases on the other hand, are gases that are changed or decomposed in the body. Methods of calculating the circulation by means of nonreacting gases so far proposed have involved the determination of the concentration of the gas in the mixed venous blood. This rather uncertain procedure has rendered unacceptable the results obtained by the use of nitrous oxide and similar substances.

In June of last year, Henderson and Haggard reported a method of determining the circulation involving the use of ethyl iodide. This method is described as simple, accurate and reliable. Its simplicity rests on the assumption that the "substance is decomposed so nearly completely in the tissues of the body that the amount in the venous blood, returning to the lungs, may be taken as virtually zero." The simplicity rests further on an easy method of taking alveolar air, which involves no cooperation on the part of the subject. The reliability and the accuracy of the method depend on the correctness of the estimation of the ethyl iodide vapor by the use of the iodine pentoxide train.

It was not our idea in the beginning to scrutinize the accuracy of the ethyl iodide method, but rather to accept it. We found early in our work, however, that the circulation in normal resting individuals, determined by the ethyl iodide method, was much higher than that determined in the same individuals by the Fick method. This led us to investigate the method as thoroughly as we knew how, with the hope of straightening out some of our worst difficulties.

In the first place, using the formula of Henderson and Haggard,

$$\text{Circulation} = \frac{\text{inspired ethyl iodide} - \text{expired ethyl iodide}}{\text{alveolar ethyl iodide}} \times \frac{\text{respiration}}{2}$$

it can be seen that if we wish to calculate the circulation within a plus or minus error of 10 per cent, it is necessary that the analysis of the ethyl iodide show an error of less than plus or minus 2.5 per cent, or at least that the figures for the various samples used in the determination of a single circulation be proportional to the actual ethyl iodide content of the samples within these limits of error.

Whereas the analytic method of Henderson and Haggard is accurate, we have found difficulty in reducing the limits of error to the foregoing necessary standards. This difficulty will undoubtedly be eliminated with further experience.

We then made a study of the alveolar air as collected in the manner described by Henderson and Haggard, which involves an ingenious way of mechanically trapping the last of successive normal respirations. We found that this method gave carbon dioxide figures considerably lower than those given by the Haldane-Priestley method. The valve designed by Henderson and Haggard and supplied to us by the manufacturers has a dead space of 80 cc. It was thought that, by eliminating this dead space as far as possible, the discrepancy between the true and sampled alveolar air could be reduced to a negligible amount.

One of us (W. F. H.) designed a valve whose dead space is 7 cc. (fig. 1). Samples taken with this valve, the Henderson and Haggard procedure being used, were lower in carbon dioxide than the true alveolar air, unless the tidal air was at least from 550 to 600 cc. The samples, then, even with a valve having a small dead space, cannot be trusted during rest, unless the tidal air is carefully watched and controlled. During

* From the Department of Medicine and the Department of Physiology and Pharmacology of the University of Louisville Medical Department.
* Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

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3. Burwell, C. S., and Robinson, G. C.: J. Clin. Investigation **1**: 87 (Oct.) 1924.
4. Field, H., Jr.; Bock, A. V.; Gildea, E. F., and Lathrop, F. L.: J. Clin. Investigation **1**: 65 (Oct.) 1924.
5. Henderson, Yandell; and Haggard, H. W.: Am. J. Physiol. **73**: 193 (June) 1925.

exercise and certain dyspneas, on the other hand, this method affords, possibly, the most convenient means of collecting alveolar samples.

In order to collect a large (250 cc.) sample of true alveolar air quickly and with a minimum of cooperation on the part of the patient, we evolved the following

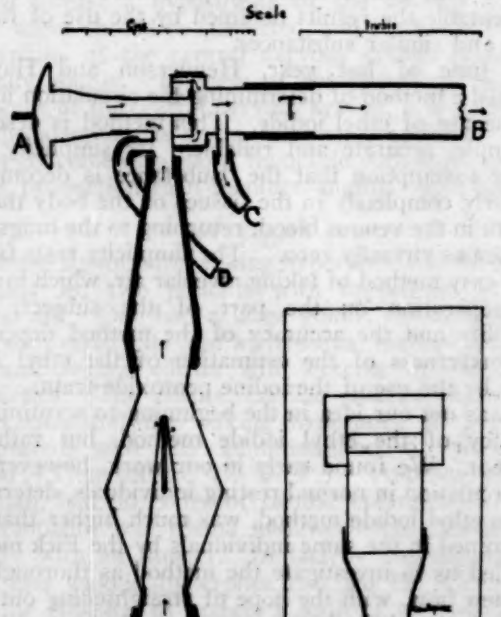

Fig. 1.—Detail of valve for taking alveolar air: *A*, mouthpiece; *B*, expired air; *C*, to sampling tube; *D*, to water manometer; *E*, inspired air from spirometer; inset, another view of valve showing width.

procedure (fig. 2): A tube was connected from the respiratory channel between the valve described above and the mouthpiece to a water manometer (*M*). This gives indications of the phases of respiration. At the signal "blow" given during expiration, the subject empties his lungs as quickly and completely as possible. During the following inspiration, the operator opens the cock (*A*) and distilled (acidulated for carbon dioxide) water flows into the reservoir (*C*), thus drawing alveolar air from the tube (*T*) into the bulb (*B*). Experiments show that it is possible to get as much as from 40 to 50 cc. of alveolar air at a time, thus filling the bulb in five or six "blows." Large samples taken in this way check exactly in carbon dioxide content with the ordinary Haldane-Priestley samples, as would be expected from the nature of the procedure. Care was taken to eliminate overventilation by too frequent "blowing."

The alveolar ethyl iodide figures are distinctly lower when the sample is taken in this manner and, as a consequence, the calculated figures for a normal resting individual are higher than the Henderson and Haggard figures. From the evidence in the literature, contradictory as it is, one is inclined to doubt that the Henderson and Haggard figures are too low. They may be too high. Our ethyl iodide circulation figures are distinctly higher than our Fick figures. This led us to a consideration of the Henderson and Haggard figure for the distribution coefficient of ethyl iodide between alveolar air and blood. The distribution coefficient, according to these authors, is 2. This means in the terms of our experiments that there is twice as much ethyl iodide in a liter of arterial blood as in a liter of the alveolar air. This figure was arrived at by analyzing blood and air, to which it had been equilibrated for ethyl iodide. Now it takes from three to ten minutes to draw blood from the aerotonometer and to anlayze it for ethyl iodide. It is plain that this procedure must be rigorously justified when we remember that the whole method depends on the assumption that ethyl iodide is completely destroyed during the thirty to sixty seconds it takes the blood to leave the lungs and return again. This is further emphasized by the consideration that Henderson and Haggard have shown that there is no ethyl iodide in the abdominal air when the subject is inhaling the substance. Since the abdominal air is known to be in gaseous equilibrium with the arterial blood, this finding might be interpreted to indicate that the ethyl iodide does not diffuse readily from the blood stream to the tissues. It is difficult to see how this interpretation can be excluded, and, if correct, leads to the conclusion that the blood, rather than the tissues, acts as the major destroyer of ethyl iodide. We are of the opinion, as shown below, that the published distribution coefficient of ethyl iodide is too low.

The assumption that ethyl iodide is destroyed during the first circulation is of course fundamental to the method and is an assumption that seems to us to be

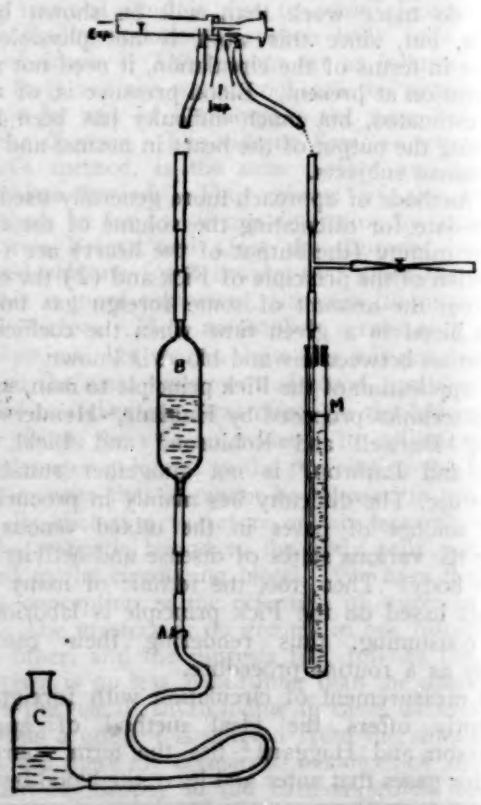

Fig. 2.—Connections of apparatus for taking alveolar air: *M*, water manometer; *A*, cock; *C*, reservoir; *T*, tube; *B*, bulb.

incompletely justified by the evidence presented by Henderson and Haggard. Our modified method of sampling alveolar air enabled us to test this assumption directly. It was shown, by proper controls, that the subjects were not giving off, in their alveolar air, combustible substances that affect the iodine pentoxide train. The subject then inspired 100 liters of ethyl iodide air, during which time an alveolar sample was

taken. He was instructed to inspire and expire room air deeply from ten to fifteen times, for the purpose of ventilating all the inspired ethyl iodide out of the lungs. A thoroughly cleansed respiratory valve and tube were then used to take a sample of the alveolar air which could get ethyl iodide only from the venous blood returning to the lungs. The figures determined by the iodine pentoxide train for normal and cardiac patients (resting and working) are given in table 1.

It is obvious that exercise lowers the oxygen tension in the tissues and venous blood. In all probability, when the oxygen tension in the tissues is low, the destruction of ethyl iodide is less rapid than when this tension is high. The possibility that the quicker circulation of the exercising subjects might leave less time for the destruction of ethyl iodide cannot be significant in this connection, because the elapsed time between the commencement of room air ventilation and the taking of the alveolar ethyl iodide air samples was the same in the two sets of experiments.

Another line of evidence, which indicates that the low tissue oxygen tension interferes with the destruction of ethyl iodide and hence distorts the calculation of the circulation, is as follows:

During a ten minute period of exercise, ethyl iodide samples were taken between the fourth and fifth minute with our modified method of sampling and between the fifth and tenth minute, with Henderson and Haggard's method of sampling and the "circulation" calculated from their ethyl iodide figures. The values are given in table 2.

During rest in normal individuals the "circulation" remains constant from time to time, because the ethyl iodide is destroyed as fast as it comes in.

TABLE 1.—*Ethyl Iodide Concentrations in Alveolar Air During and After Inhalation of Ethyl Iodide*

Ethyl Iodide Units in Alveolar Air	Ethyl Iodide Units in Alveolar Air after Inspiring and Expiring Room Air From 10 to 15 Times
Normal Resting	
17.3	8.6 (at end of successive minutes, 5.8, 5.5)
18.0	4.3 (at end of successive minutes, 3.7, 4.9)
18.0	8.0 (at end of successive minutes, 4.8, 5.0, 3.8, 4.1)
14.0	5.3 (one minute later, 4.0)
9.7	3.8
12.3	6.5
14.8	6.0
13.2	7.8
16.0	6.9
Normal Working	
23.8	10.4
25.4	13.8
24.8	15.0
34.0	16.3
Cardiac Resting	
18.0	7.6
20.7	8.9
33.2	7.2
Cardiac Working	
27.9	13.2
29.5	18.1

Now, should it be true that the figures obtained by the iodine pentoxide train represent ethyl iodide decomposition, then ethyl iodide comes back in the venous blood to the lungs in heavy concentration, and since these concentrations seem to vary with the metabolic state of the subject, it is plain that the application of the Henderson formula to the ethyl iodide figures of inspired, expired and alveolar air gives us a number that pertains more to the rate of destruction of ethyl iodide than to the rate of the circulation. It would hardly be possible to reduce the figure for ethyl iodide taken up by the arterial blood by subtracting that found in the venous blood and thus calculate the "circulation" from the amount of ethyl iodide that goes into the blood from the alveolar air.

This is true, because the ethyl iodide does not all leave the blood as it passes through the lungs, for it is in equilibrium with a fairly high tension in the alveolar air. This tension persists for at least four minutes after we have ceased administering ethyl iodide. During this time, the blood has made a complete circulation several times. The formulas available for "nonreacting gases" are, of course, ruled out.

TABLE 2.—*Ethyl Iodide "Circulation" Figures During Rest and Work*

Subject	Resting Circulation: Fick (Bock's Technic)[4] Liters per Minute	Resting Circulation: Ethyl Iodide Liters per Minute
L. R. (normal)[1]	4.5	6.83
L. O. O. (normal)	4.78	6.22
R. C. (cardiac)	....	2.36

Subject	Working Circulation: Between Fourth and Fifth Minute — Work per Minute	Circulation per Minute	Alveolar Ethyl Iodide Units	Working Circulation: Between Fifth and Tenth Minute — Work per Minute	Circulation per Minute	Alveolar Ethyl Iodide Units
L. R. (N)....	376 Kg. m.	19.7 L.	24.8	362 Kg. m.	11.9 L.	34.7
L. O. O. (N)	446 Kg. m.	20.2 L.	25.0	460 Kg. m.	11.6 L.	34.0
R. C. (C)....	111 Kg. m.	10.6 L.	26.8	118 Kg. m.	3.5 L.	34.4

Using Henderson and Haggard's distribution coefficient between alveolar air and blood, subtraction of the venous concentration raises the circulation figure in direct proportion to the ratio of the alveolar concentration to the figure obtained by subtracting the venous from the alveolar concentration. To get reasonable figures, therefore, the distribution coefficient would have to be increased.

This would seem to indicate that the method will have to be worked over in a very critical manner to make it applicable to the determination of the circulation in various metabolic conditions.

Throughout our work, we have used certified calibrated Haldane-Henderson gas analysis apparatus for determining oxygen and carbon dioxide, and iodine pentoxide powder supplied to us by Dr. Haggard of Yale University. Following Dr. Haggard's suggestion of using an electric coil for heating the iodine pentoxide tube, we made use of a thermoregulated electric oven.

CONCLUSION

The ethyl iodide method for determining the circulation will have to be revised, as combustible substances, probably ethyl iodide, seem to return in the venous blood to the lungs.

ABSTRACT OF DISCUSSION

ON PAPERS BY DRS. PRATT, HOOVER, AND MOORE, HAMILTON AND KINSMAN

DR. G. CANBY ROBINSON, Nashville, Tenn.: The results that Dr. Moore has reported regarding the ethyl iodide method of Henderson and Haggard are very disappointing to all of us who have been interested in the problem of measuring the cardiac output. This is a very important measurement; and if a method can be devised and applied to the study of patients, it is sure to give valuable information regarding disease and the action of drugs. All those interested hailed the appearance of this method with much interest, and immediately it was put on trial by several workers in the field.

The results, as far as I have been able to gather by personal communication, have been the same as those reported by Dr. Moore. A number of workers have failed to get satisfactory results by this method, so that we are thrown back on the principle of Fick, which Dr. Moore mentioned. The principle of Fick was enunciated as long ago as 1870, but it has only been in the last few years that the application of physical chemistry to biologic problems has allowed us to use it in the study of output of the heart. The principle is a very simple one; it states that if we can measure the amount of oxygen utilized each minute by the body, such as we do in the estimation of the basal metabolism rate, and if we also estimate the amount of oxygen given up by each unit of blood as it passes through the capillaries, then we can calculate the amount of blood necessarily put out by the heart each minute in order to carry through the body the necessary oxygen. In other words, if the body is consuming 300 cc. of oxygen each minute and if it is taking 5 cc. out of every 100 cc. of blood, it is necessary that 6 liters of blood be put out by the heart; that is, by each ventricle each minute. Dr. Burwell and I have attacked this problem and have worked out a method by which the output of the heart can be measured accurately in man. Recently this has been applied to the study of experimental animals, and several of the workers in my department are carrying out now a series of investigations on the output of the heart under varying conditions. Their work has brought out some interesting points; for instance, they have shown that digitalis administered to animals in doses comparable to those used in man produces diminution in the output of the heart, often as much as 25 per cent of the original output. These results have a very definite bearing on the digitalis problem and indicate the value of the results that we can expect from exact measurements of the cardiac output. Unfortunately, at present the method is not readily applied to the study of patients, but it is hoped that an accurate method may be found soon so that the output of the heart may be measured in various diseases.

DR. M. D. LEVY, Houston, Texas: It has been said that without the clinical laboratory modern medicine could hardly exist, but there is still a place for clinicians. I think Dr. Hoover's paper has especially shown us the value of this very simple costal movement that Dr. Guthrie has spoken of. Several years ago Dr. Hoover first described that movement of the costal margin resulting from flattening out of the diaphragm. Our experience with it with even the sophomore students in diagnosis was most gratifying. After demonstration of the phenomenon to them they were fairly proficient in recognizing conditions producing that change. The first case that he mentioned in which we have a combination of findings, and by laying on of the hands and simple observation entirely straightening out and analyzing that case, I think, was an extremely eloquent sermon for all of us to observe our patients more closely than we have been doing. In the complete paper, Dr. Hoover mentions several cases of paroxysmal tachypnea, I think six cases in all, one case associated with a marked cardiac involvement. Twelve or thirteen years ago, while I was an intern in St. Louis, there came to the hospital a negro from the lead works, suffering from symptoms of lead poisoning, constipation and lead line, with stippling of the cells. While in the ward at the hospital, he had several attacks of marked slowing of the heart down to 14, 16 or 18 a minute, with a respiratory rate up to 56, a complete transposition of the pulse and respiratory rates. This was very slight in effect on the patient. The nurse, on noticing the change, became much more alarmed than the patient himself. Under large doses of atropine the patient apparently recovered and in a few weeks went out apparently well. Our knowledge of the pathology and physiology of this was not clear, but we thought it was due to some little change in the vagus nerve, probably the result of the lead itself.

DR. GEORGE PINESS, Los Angeles: I do not believe that such conditions as described by Dr. Pratt should be termed asthma. As we understand asthma it is usually an obstruction, expiratory in character, while the patients described by the author gave no evidence of respiratory obstruction. The cases seen by myself with the usual history of sudden awakening with fear and apprehension of impending death, inability to get air and rushing to the window and attempting to get air, have usually proved on careful examination to be myocardial in character and usually have some decompensation. In the advanced cases described by Dr. Pratt there is usually some evidence of edema with a passive congestion, such as enlargement of the liver, and a few moist râles at the bases. The difficulty in differentiating this condition from a true bronchial asthma should not be great because the average asthmatic gives a definite history of expiratory dyspnea and not inspiratory, and the attack usually is of longer duration than so-called cardiac asthmas as described by the author. The cases described by Dr. Pratt are usually found in persons past the fourth decade of life. I have never seen one in a person under that age. The prognosis is usually bad, although I have had several patients under my care who have lived past the duration described by Dr. Pratt. Epinephrine usually does not give relief, while morphine quiets them down and makes them quite comfortable. I agree with Dr. Hoover that this should be termed hyperpnea instead of cardiac asthma.

DR. JOSEPH H. PRATT, Boston: In all my cases that I have classed as cardiac asthma the patients did have actual dyspnea in the sense in which Dr. Hoover employs the word. Those patients that I saw in attacks had difficulty and distress in breathing. It was an inspiratory dyspnea, if my observations were correct. Sir William Osler and Dr. Longcope have observed attacks of cardiac asthma in which the dyspnea was expiratory. Sir James Mackenzie states that in attacks that he witnessed, the type of breathing was exactly like that seen in bronchial asthma. Mackenzie believed that in cardiac asthma, as in ordinary bronchial asthma, a spasm of the muscles of the bronchi exists. Dr. Piness is, I think, making the common mistake of confusing the severe dyspnea of advanced heart failure with the form of paroxysmal dyspnea that is known as cardiac asthma. He speaks of the frequency with which he has seen these cases in the hospital ward. Attacks of cardiac asthma are rarely seen in any hospital ward, but severe cardiac dyspnea is, of course, common. He also referred to the enlarged livers in the cases he has seen. I have never seen or read of a case of undoubted cardiac asthma associated with enlargement of the liver (passive congestion). It is interesting that evidence of failure of the right heart as shown by enlargement of the liver has been lacking in all cases. The available evidence points to a failure of the left ventricle during the attack of cardiac asthma. An elevation of the blood pressure is characteristic of the severe paroxysms, as I have stated in the paper. If the left ventricle is weak why should the arterial blood pressure rise? Dr. Canby Robinson found in his studies that in acute failure of the left ventricle its output of blood was increased, and this he thinks may lead to an elevation of the blood pressure.

DR. CHARLES F. HOOVER, Cleveland: Dr. Levy describes a case of paroxysmal tachypnea that occurred in a man who had lead poisoning. I have never seen this symptom in any other lesion than mediastinitis. All my patients had either syphilitic or tuberculous mediastinitis. The first case to come under my observation was that of a man who had syphilitic disease of the aorta and heart. One of his paroxysms developed as I was palpating his pulse. The heart rate suddenly went from 80 to 40 a minute, and then after several cycles of the slowed heart rate the respiratory rate rose from 20 to 60 a minute. The attack ceased in about ten minutes after the hypodermic injection of 1 mg. of atropine sulphate. Atropine was then given as a routine, 1 mg. twice daily, and there was no recurrence of the attacks. Antisyphilitic treatment was then commenced and the paroxysms did not return, although the atropine was discontinued after three days' administration. In response to inquiry, these patients say they have not the sense of air hunger with which they are familiar. They have a "feeling of constraint across the upper chest and then comes an irresistible impulse to breathe

very rapidly." The only experimental work that I can find which throws any light on this subject is the work of Baglioni, who found in the dog that excitation of the pulmonary branch of the vagus causes arrest of the heart beat and very rapid small respiratory excursions which are taken with the lungs in the inspiratory phase. This is what happens in some cases of tachypnea, but all do not have the slowed heart rate. In fact, out of five cases only one had bradycardia with the paroxysmal tachypnea.

AN EPIDEMIC OF UNDETERMINED NATURE: DENGUE?*

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EUGENE M. LANDIS, M.S.
AND
S. DAVID GLUSKER
PHILADELPHIA

There occurred on Cape Cod, Massachusetts, during the summer of 1925 an epidemic of mild nature, characterized by the following symptoms, physical condition and course: generally a sudden onset with a rapidly rising temperature; pain of varying degree located in the abdomen, limbs, back, and especially over the lower ribs, increased by normal breathing; headache, chiefly about the eyes; general malaise; occasionally chilliness but never a "chill"; occasionally vomiting; rarely sore throat; never convulsion; an indefinite physical examination; persistence of these symptoms for a short time, varying from twelve or eighteen hours to one or three days, then remission of fever and general symptoms in turn lasting from twelve to thirty-six hours, followed by a "second peak" of temperature and recurrence of the same symptoms but less severe in character; final subsidence of the temperature to subnormal, with the patient considerably prostrated and entering on a slow convalescence prolonged out of proportion to the severity of the acute stages.

The epidemic began early in July, spread quite rapidly, reaching its peak in about two weeks; then began slowly to decline, finally disappearing early in September. Our patients resided in a narrow strip of territory, stretching about 16 miles along the eastern shore of Buzzards Bay.

We saw fifty cases in all: twenty girls, nineteen boys, seven women and four men. There is a preponderance of children, but in the summer population of Cape Cod there is a general preponderance of children. A striking feature of the epidemic was its family nature: in each of eight families there were from two to eight cases following one another in rapid succession. The onset was generally sudden, at times like a bolt literally "from the blue," coming as it often did while the child, apparently well, was playing on the beach, bathing, sailing, or awakened out of a sound sleep at night. It generally took the form of a sudden sharp pain located at the epigastrium; e. g., a child was seized with such a pain at 11 a. m. while out sailing, arrived at our office at 1 p. m., and showed on examination only a distressed sick look, suppressed breathing, chronically enlarged tonsils, and a temperature of 101.4 F.; less frequently the pain was located over the lower ribs on one or both sides. When the onset was gradual, it took the form of general malaise, chilliness, and "aching all over."

* Read at the meeting of the American Pediatric Society, June 2, 1926.

The subsequent course of the malady was as described above, perhaps the most striking features being its "diphasic" character, the debility, and prolonged convalescence. The absence of respiratory symptoms and signs, coryza, cough, bronchitis, pleuritic friction rubs, was also striking.

Laboratory studies, except in special cases, were of little significance. The urine was normal in all but three cases, two showing a slight temporary albuminuria with a few hyaline casts, the third a temporary lighting up of a postinfluenzal nephritis which had occurred in April, 1925. Bacterial studies of the throat made in eleven patients showed only ordinary mouth bacteria. Blood examinations made in fifteen patients showed nothing uniformly characteristic; polymorphonuclear leukocytosis was the rule both in the first and in the second stages of fever, the range of the total counts being from 9,000 to 21,000. A leukopenia was observed in only four patients.

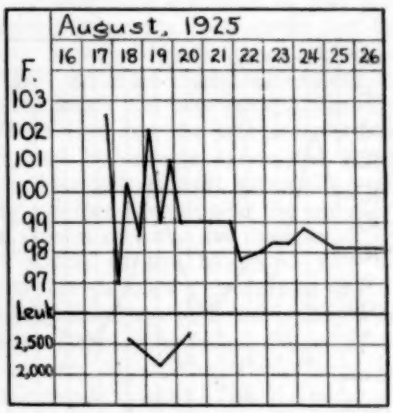

Chart 1.—Temperature and leukocytes in case 1.

MOSQUITOES

The report on four different groups of mosquitoes caught in August and sent to the Army Medical Museum at Washington showed the presence of *Aedes fitchii, vexans, sollicitans* and *cantator,* and *Culex pipiens,* ordinary woods and salt marsh mosquitoes not known to be disease carriers. Also, on August 25, Dr. Joseph Bequaert, from Harvard Medical School, collected larvae and pupae and found only *Aedes sollicitans* and *Culex pipiens.*

The following histories illustrate the nature of the epidemic.

CASE 1.—A woman, aged 35, seen, August 17, complained of general pains and malaise, headache and chilliness, all persisting through the next day. At 8 p. m. examination revealed: temperature, 102.5; pulse, 120; respiration, normal. Acetylsalicylic acid was given. Profuse sweating occurred five hours later, the temperature dropping (chart 1).

Leukocytes in Case 1

	Total	Neutrophils	Lymphocytes	Large Mononuclears	Transitionals	Eosinophils	Basophils
August 20.....	2,600	24%	73%	2.0%	0.0%	0.0%	1.0%
September 12.....	7,800	46%	34%	18.0%	2.0%	.....	.....

August 19, the patient was comfortable yesterday, but during the night was restless, vomiting, and having severe pain in the back, limbs and lower ribs. The temperature rose to its second "peak" at 4 a. m., August 19. "Break-bone fever, all right," remarked the patient at the morning visit.

August 24, there was slight jaundice. Subsequently there was slow convalescence for four or five weeks, with normal temperature but slow pulse, from 60 to 65.

Laboratory examinations of the throat and urine were negative. There was leukopenia throughout both acute stages: 2,600 in the initial stage, 2,200 and 2,800 in the recurrent stage, rising during a prolonged convalescence to only 7,800, four weeks after onset. The differential formula is also

striking: during the recurrent stage, a marked increase in the lymphocytes up to 73 per cent at the expense of the neutrophils (24 per cent); during convalescence, a sluggish change of these two types of cells to 34 and 46 per cent, respectively, the large mononuclears meanwhile rising from 2 per cent to 18 per cent.

Three successive groups of mosquitoes caught inside and outside the house proved to be *Aedes sollcitans* and *A. cantator*.

CASE 2.—A girl, aged 13, seen, August 11, complained of pain between the scapulae, vomiting, chilliness, fever and headache. The face was flushed; the eyes and conjunctivae were injected; the throat was red. The temperature was 104; pulse, 120; respiration, 20, easy. The throat and urine were normal. Leukocytes numbered 7,400.

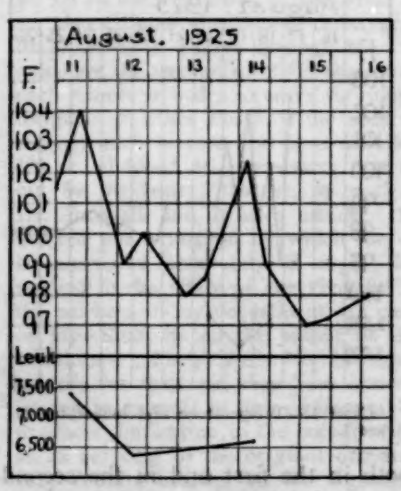

Chart 2.—Temperature and leukocytes in case 2.

With the drop in temperature, August 12, came marked improvement in the patient's general condition throughout the 12th and 13th; on the evening of the 13th, there was recurrence of the headache, and pain between the scapulae. The rise of temperature reached its second "peak" at noon, August 14, then subsiding to subnormal, together with a slow pulse and general feeling of listlessness. There was convalescence of two weeks.

Leukocytes in Case 2

	Total	Neutrophils	Lymphocytes	Large Mononuclears	Eosinophils
August 14.....	6,000	71%	23.5%	2.0%	1.5%

Cases 3, 4 and 5, in a mother and two children, are examples of the house nature of the epidemic. It started with the cook, a mild case, not seen by a physician.

CASE 3.—The mother had a mild attack, beginning, August 3, in early morning, coincidently with the illness of her son (patient 4), with general malaise, lasting twenty-four hours. The condition improved, but the illness recurred, with the second "peak," August 5, and later convalescent debility and subnormal temperature. There was leukocytosis in both febrile stages.

CASE 4.—The son, aged 14 years, was affected similarly to his mother, but with the second stage more severe than the first, epigastric pain worse when he laughed, and a leukopenia of 4,600, as contrasted with a leukocytosis of 20,000 at the onset, five days before.

Leukocytes in Case 4

	Total	Neutrophils	Lymphocytes	Mononuclears	Transitionals	Eosinophils	Basophils
August 3	20,000	61.4%	29%	3.1%	2.5%	2.0%	2.0%
August 8	4,600	24.0%	70%	2.0%	2.0%	2.0%	0.0%

The leukopenia as well as the characteristic epigastric pain did not develop until the recurrent stage. The similarity of this striking blood picture to that of case 1 may be noted: low neutrophils, high lymphocytes. Convalescence was slow.

CASE 5.—A vigorous woman, aged 19, presented a "sluggish" case. Gradual onset occurred, August 1, with a tired feeling, slight pain in the neck and shoulders, "diphasic" course, normal and slightly increased white count during the first and second acute stages, respectively, and on the eighth day a general "slump": marked lassitude, subnormal temperature, pulse and leukocytes (chart 3). Heart action was normal except for the remarkably slow rate. This state of affairs continued for two weeks, at the end of which time, though still not of normal strength, she had resumed her normal life, barring vigorous exercise.

Cases 6, 7, 8 and 9, in a mother and three sons aged 12, 8 and 6, respectively, represent another family group of cases.

CASES 6 and 7.—The mother and 12 year old son came down coincidently at 2 a. m., July 28, each with severe epigastric pain, nausea and vomiting in the son but none in the mother, symptoms suggesting the evening meal as the cause. These patients evidently were infected at the same time and probably infected patient 8, succumbing, August 3, who in turn infected patient 9, attacked, August 10, the incubation periods being six and seven days, respectively. The illness in the 12 year old son ran a characteristic "diphasic" course, the chief feature being the persistence of a dull, aching pain in the left side with finally, not until the ninth day, development of a pleuritic friction rub, the only case of the series in which this physical sign was detected.

CASE 8.—The 8 year old son had a short, mild, "diphasic" course, with sudden onset, August 3, at the family hour of 2 a. m. The unusual features were the far greater severity of the abdominal and thoracic pain during the recurrent stage as compared with the first stage, rigidity of the right side of the abdomen, and temporary absence of both knee-jerks.

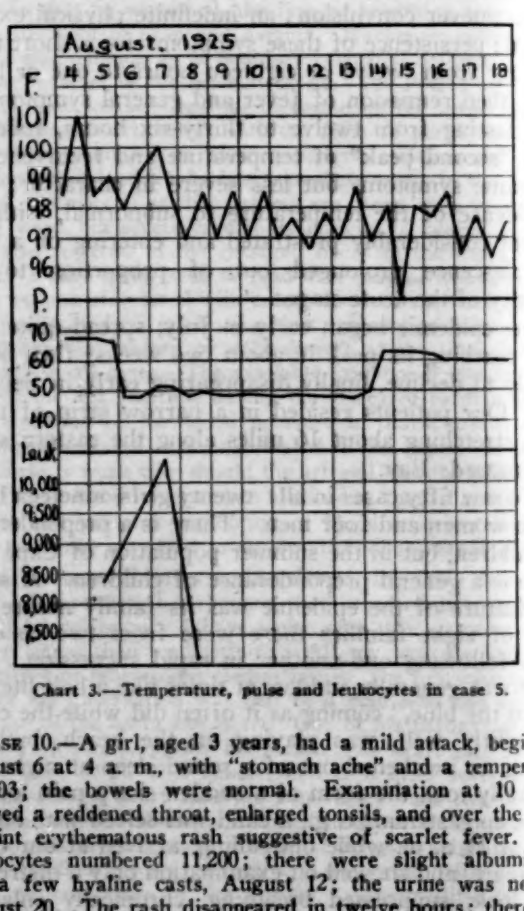

Chart 3.—Temperature, pulse and leukocytes in case 5.

CASE 10.—A girl, aged 3 years, had a mild attack, beginning August 6 at 4 a. m., with "stomach ache" and a temperature of 103; the bowels were normal. Examination at 10 a. m. showed a reddened throat, enlarged tonsils, and over the chest a faint erythematous rash suggestive of scarlet fever. The leukocytes numbered 11,200; there were slight albuminuria and a few hyaline casts, August 12; the urine was normal, August 20. The rash disappeared in twelve hours; there was no desquamation.

This was the only case of the series in which any rash was observed; its occurrence, the coincident reddened throat and subsequent albuminuria, of course, suggested a mild scarlet fever; there had been no

exposure, however, and no case of scarlet fever occurred in the colony throughout the summer.

Cases 11, 12 and 13 and cases 14 to 22 represent two more groups of family cases occurring in persons living in neighboring houses. In the first group, the illness started about July 12 with the mother, and from her spread to her nursing, 6-weeks old baby. The latter was taken suddenly sick, July 15, with severe crying, apparently in pain, and a temperature of 102. Examination showed only marked pallor of the face; the throat was red; the extremities were blue and cold. Respiration was 40, with an expiratory grunt; temperature, 102; pulse, 156. July 16 the patient was better, though now there were râles at both bases posteriorly; from that time on the patient improved and recovered entirely. She was the only seriously sick patient in this whole series.

DIAGNOSIS

The exact nature of this malady is by no means clear. Certain possibilities suggested by the symptoms, as pneumonia, appendicitis and other abdominal conditions, malaria, scarlet fever and streptococcal sore throat, all were excluded early in the epidemic. There remain for consideration only three conditions: influenza, "pleurodynia" ("devil's grip"), and dengue.

Influenza.—There was little resemblance to epidemic influenza in these cases; the summer season, the sudden onset, the sharp localization of the pain, the absence of respiratory signs, were unlike any picture of influenza that we have observed either in army or in pediatric practice. Too much weight cannot be given to bacteriologic studies of the throat, but it may be mentioned that of twelve deep throat cultures taken during the epidemic only one showed *B. influenza;* her brother's culture was negative; neither of these cases was clinically like the epidemic cases, and neither is included in the series. Of the remaining eleven cultures, all were negative, all were clinically of the prevailing epidemic type. We may exclude influenza.

"Pleurodynia" and Dengue.—"Pleurodynia" is a term applied to a symptom complex occurring in epidemic form and heretofore observed only in the summer season of the temperate zone. Dabney [1] described such an epidemic occurring in Virginia in 1888; recently, Hangar, McCoy and Frantz,[2] Payne and Armstrong,[3] Greene [4] and Torrey [5] have studied epidemics of the same nature in Philadelphia, New Jersey and New York City in 1923 and 1924. The symptoms observed by us in the present epidemic are essentially identical with those described by these authors, and we may for the present regard it as another instance of "epidemic pleurodynia" occurring for the third successive summer in the north temperate zone.

But "pleurodynia" means "painful side" and is a symptom or rather group of symptoms due probably to a diaphragmatic pleuritis. Is it a clinical entity as heretofore maintained or is it a manifestation of a specific, already classified disease? As one studies these epidemics they suggest a tropical malady, dengue: the latter is defined as "a noninfectious disease of low mortality, frequently epidemic, confined to warm climates, due to a filter-passing organism conveyable by *Aedes* (*Stegomyia*) *fasciata,* and characterized by an abrupt onset, headache, aching eyes, severe body and limb pains, anorexia and sometimes vomiting, a variable and usually "diphasic" febrile course of from three to eight days, frequently a relatively slow pulse, leukopenia, and a late rash—and often by prolonged convalescence." [6]

"Pleurodynia" corresponds closely with this definition both in its epidemiology and in its clinical features: The manner of its spread is still unknown; apparently it is not contagious; in our own epidemic it was not conveyed by the respiratory route; food could not be incriminated, too many sources of milk and water supply being involved; there were no intestinal excreta to spread it; weather conditions did not vary materially from the mean on Cape Cod for the last seventy-five or eighty years. Spread by insects seems the most probable explanation. Mosquitoes were unusually prevalent and thick in the affected area during the summer, and conveyance of a poison or virus by them must be considered. Small [7] found in the blood of two of Torrey's three pleurodynia patients a protozoan organism closely resembling *Plasmodium malariae* in its cyclic development and suggests that it be called *Plasmodium pleurodyniae.* The analogy to malaria strengthens the suspicion of a mosquito-borne disease. Small's observation, however, as he himself points out, is a limited one and needs confirmation.

The clinical histories of our cases correspond to the description of dengue, but with differences in certain respects: the pain, the rash and the leukocyte counts. The pain was like that of dengue in being general yet unlike in its sharp localization over the thorax and at the epigastrium; a rash is reported in about 80 per cent of cases of dengue constantly under observation; it was detected in only one of our cases; but as this sign is notoriously apt to be slight and evanescent in the former disease, it may well have escaped notice in our patients, seen only once a day for a few days. The leukocyte count in dengue is variable, normal or slightly increased counts occurring during the first few hours of an attack of dengue, the tendency toward a leukopenia, low neutrophils and high lymphocytes becoming more marked as the disease progresses (as in case 4 of our series). "It appears, then, that leukopenia is by no means a constant or necessary feature of this disease, and its absence cannot be regarded as negativing the diagnosis of dengue." [8] On the whole, in view of the marked variability of the clinical picture of dengue emphasized by all students [9] of the disease, the differences thus cited in the cases of the present epidemic might well fall within those variations, especially as the patients were living in the temperate zone.

But epidemiologic and clinical resemblance between diseases does not constitute proof of their identity; laboratory data are often necessary to determine this. We have definite laboratory facts concerning dengue: we have no such information about pleurodynia; in the former it is known that the disease is produced by a filtrable virus conveyed by the stegomyia mosquito;[10] in

1. Dabney, W. C.: Am. J. M. Sc. **104**: 488, 1888.
2. Hangar, F. M.; McCoy, C. C., and Frantz, A. M.: An Epidemic of Mild Fever of Unknown Nature, J. A. M. A. **81**: 826 (Sept. 8) 1923.
3. Payne, G. C., and Armstrong, Charles: Epidemic Transient Diaphragmatic Spasm, J. A. M. A. **81**: 746 (Sept. 1) 1923.
4. Greene, D.: Arch. Pediat. **41**: 322 (May) 1924.
5. Torrey, R. G.: Am. J. M. Sc. **168**: 564 (Oct.) 1924.
6. Cleland, J. B.: Practice of Medicine in the Tropics, edited by Byam and Archbald, 1923.
7. Small, J. C.: Am. J. M. Sc. **168**: 570 (Oct.) 1924.
8. Siler, J. F.; Hall, M. W., and Hitchens, A. P.: Results Obtained in Transmission of Dengue Fever, J. A. M. A. **84**: 1163 (April 18) 1925. Philippine J. Sc. **29**: 304, 1926.
9. Castellani and Chalmers: Manual of Tropical Medicine, ed. 3, 1919, p. 1244. Coleman, T. D., in Nelson's System **2**: 106-112, 1920. Chandler, A. C., and Rice, L.: Am. J. Trop. Med. **3**: 233 (May) 1923. Siler, Hall and Hitchens (footnote 8).
10. Cleland, J. B., and Bradley, B.: J. Hyg. **16**: 317, 418, 1918. Harris, W. H., and Duval, C. W.: J. Exper. Med. **40**: 817 (Dec.) 1924. Siler, Hall and Hitchens (footnote 8).

the latter disease no blood examinations for a virus have been made, no mosquito work has been done. We therefore have no definite knowledge of the possible relation of these two conditions to each other; further study is necessary to determine this.

The repeated occurrence in the temperate zone of a disease so closely resembling dengue, heretofore observed only in the tropics, raises anew the question as to the method of conveyance of the dengue virus. The only proved [8] carrier of this virus, the stegomyia mosquito, does not exist at the latitudes where these epidemics of pleurodynia have been observed: 40°, 40° 45′, and 41° 30′ N., respectively; either these cases are not dengue or there is more than one carrier of the latter's virus. If such an additional carrier exists, it is presumably a mosquito and a species found in abundance in both the tropical and the temperate zones; such a species is *Aedes sollicitans*, the only one of those found by us in the present study likewise existing in the tropics. It is widespread, has never been suspected of transmitting disease, and consequently has never been so tested.

We believe that in future epidemics of pleurodynia, biting experiments should be carried out with both the *Aedes sollicitans* and the stegomyia mosquitoes, that the blood of patients should be examined for the dengue virus and for *Plasmodium pleurodyniae*, and that the possible spread of dengue through *Aedes sollicitans* as a carrier should be investigated. At present, lacking the information which these studies would give, we do not feel that we can exclude a diagnosis of dengue in the epidemic described in this paper.

TREATMENT

The treatment was simple and directed chiefly to the relief of pain: bed; baths, tepid or cold according to the wish of the patient; extreme heat or extreme cold locally; strapping the chest; and drugs in the shape of acetylsalicylic acid, acetphenetidin or quinine were all tried with varying degrees of success. The convalescent stage required attention; bed for at least forty-eight hours of a continuous, normal or subnormal temperature after the second febrile stage; quick resumption of sea bathing in the warm waters of that region even for those who had had albuminuria, and gradual resumption of other outdoor activities.

SUMMARY

An epidemic of a febrile disease occurring on Cape Cod at latitude 41° 30′ N. during the summer of 1925 was characterized by a sudden onset, by severe pain most frequently located over the lower ribs and at the epigastrium, by a short course, by an irregular remitting fever, frequently by a "diphasic" type, by negative physical examinations, by prostration and by slow convalescence.

The most important part of the treatment was a not too rapid resumption of the child's summer activities.

Similar epidemics in the temperate zone have been infrequently described before and classified as a distinct entity under the term epidemic pleurodynia.

It is suggested that these epidemics may be due to the virus of a tropical disease, dengue, the clinical picture being modified by climatic conditions of the temperate zone.

In future epidemics, intensive studies should be made on the relation of mosquitoes to these cases of pleurodynia.

FOCAL INFECTION FROM THE LABORATORY STANDPOINT *

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Despite the fact that the subject of focal infection has been prominently before the medical profession during the past decade, a good deal of confusion and skepticism of its importance still exists. One ordinarily thinks of only the acute bacterial infections and especially of the specific infections and contagious diseases in relation to infection, but it has been estimated that from 80 to 90 per cent of all deaths are due to some type of infection, and the acute specific infections are in reality responsible for but a small part of these. To not a few physicians the subject of focal infection begins and ends with the possibility of a deforming arthritis being related to infected teeth or tonsils, the removal of which may or may not be followed by a magical disappearance of the joint involvements. But the possible importance of simple nonspecific infections of the apexes of the teeth, the follicles on the tonsils, the accessory nasal sinuses and infection in general of the upper and lower respiratory tracts as well as to a lesser extent of the intestinal and genito-urinary tracts, in relation to the infection of more distant tissues, as the synovial linings of joints, the sheaths of nerves and muscles, the eye, heart, kidneys, gallbladder, biliary ducts and other organs, including even a large number of the psychoses and neuroses, as well as possibly to some of the toxic effects ascribed to the administration of arsphenamine and mercury and especially exfoliative dermatitis and allied conditions, has been properly emphasized, although conclusive bacteriologic evidence of the relationship may be lacking in many instances, our knowledge of the mechanism incomplete, and our means of exact diagnosis sometimes quite inadequate.

From the bacteriologic and immunologic standpoints, many interesting and important questions arise which time and space do not permit of detailed discussion. What types of infection are especially important as primary foci? What organisms are of especial importance in relation to focal infection? Are the secondary foci due to the presence of the organisms themselves or only to their toxins? How are these transported to distant tissues in the production of secondary foci? Does focal infection necessarily imply or demand a specific tissue affinity on the part of the organisms or a peculiar susceptibility of the tissues? Why are some persons subjected to the second lesion of focal infection, while others escape with presumably worse primary foci? What can the laboratory do in the way of aiding diagnosis and treatment in a practical and satisfactory manner? These are some of the numerous questions which I shall attempt to discuss in a brief and concise manner.

According to my experience, infections of the apexes of the teeth, the nasal accessory sinuses, tonsils and bronchi are the most important primary foci in adults. Even in some of those cases of gallbladder and bile duct infections believed to be secondary foci, I believe that infections of the upper respiratory tract are of primary importance, followed in sequence by secondary infection of the intestinal tract and of the biliary passages through the swallowing of purulent material,

* Read before the College of Physicians of Philadelphia, May 5, 1926.

or possibly by direct blood stream infection of the liver. Likewise, in that difficult group of arthritis cases believed to be due to organisms or their toxins absorbed from the intestines, the possibility of primary foci in the upper respiratory tract and mouth first engages our serious attention, although it is apparently possible for some of the bacteria of the normal intestinal flora to produce secondary infections and notably pyelitis by the colon bacillus. The genital organs, and particularly infections of the prostate gland and adnexa, are especially important in relation to the production of gonococcus arthritis, tenosynovitis and endocarditis, although the frequency with which staphylococci and occasionally even streptococci are to be found in chronic urethroprostatitis suggests that these organisms, rather than the gonococcus, may be responsible.

But of all the organisms believed to be responsible for focal infection, the group of streptococci are undoubtedly most important followed in order by the staphylococcus, pneumococcus, gonococcus and colon bacillus. *Streptococcus hemolyticus* and *Staphylococcus pyogenes-aureus* have certainly been of primary importance in my experience, especially in relation to focal infections of the teeth, gums and respiratory tract, particularly of the nasal accessory sinuses. But the possible importance of the organism of influenza and probably even of the diphtheroid bacilli in relation to focal infection is to be kept in mind, as well as some of the specific infectious organisms, such as the tubercle and typhoid bacilli and the spirochete of syphilis, from the standpoint of establishing primary foci from which distant organs may become secondarily infected.

Whether or not the secondary lesions of focal infection are due to the actual transference of the organisms themselves or only to their toxins cannot be definitely answered. It is ordinarily believed that the arthritis and tenosynovitis of focal infection are due to the presence of the organisms; and the frequency with which they are found in blood cultures in endocarditis leads to the same conclusion. But the question has been frequently raised whether the iritis, optic neuritis and other ocular diseases of focal infection are due to the presence of bacterial toxins absorbed from the primary foci or to the organisms themselves. Altogether too frequently, ophthalmologists throw away the bits of iris removed during iridectomy instead of subjecting them to culture, preferably in a medium of hormone glucose broth; but it is my opinion that these and the secondary foci in general are due to the presence of the organisms themselves rather than to their toxins absorbed from the primary focus. But the possibility of bacterial toxic substances alone producing the secondary lesion of focal infection is not to be underestimated, especially in relation to the psychoses and neuroses, in which, in the opinion of McCarthy,[1] they appear to produce symptoms with greater frequency in persons with arterial hypotension probably of endocrine unbalance. Furthermore, the soluble proteins of bacteria absorbed from primary foci may be responsible in part for allergic sensitization, especially in relation to bronchial asthma, nervous rhinitis and some of the skin diseases, particularly exfoliative dermatitis following the administration of arsphenamine and its congeners.

The distribution of organisms and their toxins would appear to be largely by the blood. Absorption into the lymph draining the primary focus probably is of first occurrence and alone responsible for secondary foci situated in the direct line of drainage; but distribution to more distant organs is almost certainly by way of the blood stream. In this manner the question of the bactericidal and antitoxic qualities of the blood may be important factors in determining whether or not secondary infections occur, as in all probability these are prevented in many instances by a destruction of bacteria or a neutralization of their toxic products by the blood, even though these immunologic agents may be ineffective in the sterilization of the primary foci.

In case the blood is unable to destroy organisms finding their way into it, what governs their subsequent localization in distant organs and tissues? Does this necessarily demand that the organism shall acquire in the primary focus a specific elective affinity for a particular organ or tissue? Or does it mean that the organism or its products circulating in the blood encounter widespread immunologic resistance in all but those tissues or organs of secondary localization? Or is localization to be explained on anatomic grounds in which the process is favored by sites of reduced resistance due to trauma in a broad sense, disturbances of circulation with closed capillary areas, and embolism? In my opinion the importance of acquired selective tissue affinity on the part of the organism has been greatly overemphasized, as I believe is true of the so-called specific neurotropic and dermotropic strains of *Spirochaeta pallida* in relation to localization in syphilis secondary to the primary lesion or chancre. Indeed, the theory of acquired elective affinity on the part of bacteria in relation to focal infection and the difficulty or impossibility of its demonstration by animal experiments may be one factor responsible for the skepticism of physicians regarding the importance of focal infection in the production of disease, and in my opinion it is not at all necessary to believe in this theory in relation to the subject. I am particularly impressed with the importance of general virulence of the organism, local tissue immunity, hereditary influences and trauma in a broad sense as the determining factors, although space does not permit here a detailed discussion of them.

In my opinion these agencies also largely determine why some persons are more prone to secondary focal infections than others. The persons showing the largest shadows or areas of cavitation and radiolucence about the apexes of the teeth are not always the ones showing secondary localizations or lesions of focal infection. Indeed, as stated by Price,[2] the occurrence of these areas of rarefaction may be interpreted as evidence of a good local reaction and a high immunologic defense against systemic infection, with well marked bactericidal activity of the blood sufficient for protecting against secondary infections until these immunologic agencies are broken down by some kind of systemic overload, among which intercurrent acute infection, anemia, undernutrition, hypotension, endocrine unbalance and a reduction of ionic blood calcium may be of importance.

Unfortunately, organisms may survive in the blood long enough for their transference to distant tissues and organs, even though they may not be able to multiply in the blood and thereby produce the clinical evidences of bacteremia or septicemia. But the matter of secondary localizations or lesions in focal infection involves not only the virulence and numbers of organ-

1. McCarthy, D. J.: The Influence of Focal Infections, J. A. M. A. 85: 1949 (Dec. 19) 1925.

2. Price, W. A.: Dental Infections and Related Degenerative Diseases, J. A. M. A. 84: 254 (Jan. 24) 1925.

isms gaining access to the circulating blood, but likewise the kind and degree of local resistance about the primary focus or foci, the degree of systemic humoral and cellular resistance, and the question of predisposition to secondary infection by anatomic defects and the presence of areas of inherited or acquired reduced tissue resistance.

Finally, what may the laboratory do in aiding the diagnosis of focal infection? Reliable cultures may be taken of extracted teeth, infected sinuses, tonsils, the secretions of the respiratory tract, and prostatic secretions. The finding of streptococci, especially the hemolytic and viridans types, is always of considerable significance, as likewise the presence of *Staphylococcus aureus* and the pneumococcus. But the laboratory can do little beyond these cultural examinations; and bacteriologic studies of the secondary foci, such as those in the iris and other parts of the eye, the joints and sheaths of the muscles and nerves, are usually impossible although far more important in clinching a diagnosis of focal infection than an investigation of the primary foci. The one exception is the detection of bacteria in the blood in septic endocarditis and especially of streptococci, although even this may require several attempts and careful attention to technic before positive results are obtained. Certainly, merely finding streptococci, staphylococci or pneumococci in the crypts of the tonsils or secretions of the respiratory tract does not establish the existence of focal infection, and the same may be said of bacteriologic examinations of the feces; but the finding of these and other organisms in cultures of closed spaces such as apical abscesses, the sinuses and the gallbladder are of much greater significance because, by proper attention to technic and detail, secondary contaminations may be reduced to a minimum or entirely excluded.

But even when organisms are recovered from primary foci under acceptable conditions, can their relationship to secondary focal lesions be proved? In the first place, the instrumentation necessary, as the extraction of a tooth, enucleation of a tonsil, curettage of a sinus or administration of an autogenous vaccine, may be followed by an exacerbation of the secondary foci, and such are always strong presumptive evidence of a relationship between the foci of primary and secondary infection. Determining the virulence of the organism for the rabbit or other lower animal may be of aid, as likewise the question of elective localization of the organism in the corresponding organs of this or some other suitable animal possessing a reasonable degree of susceptibility. But the absence of virulence and the absence of evidence of elective localization of the bacterium in the healthy lower animal does not exclude the possibility of its being responsible for focal infection in the sick human being. On the other hand, the demonstration of virulence and elective localization is strong presumptive evidence in favor of regarding the organism as the etiologic agent, although even here the matter of localization in the lower animal need not always involve the question of acquired selective tissue affinity on the part of the bacterium.

Is a measure of the immunologic resistance of value? Unfortunately, a determination of the bacterial activity of the blood is not always to be accepted, because, in my opinion, the blood of a patient capable of preventing the growth of bacteria in the test tube may not prevent the establishment of primary foci of infection, or kill off the organisms during the intermittent and probably fleeting periods of bacteremia during which the organisms are being transported to distant tissues and organs. But a bactericidal blood test along the lines developed by Cohen and his associates is of value in estimating the chances of a generalized blood infection from a primary focus, even though of limited value in relation to focal infection. In other words, it would appear that when the blood is bactericidal or bacteriostatic in vitro for an organism, the latter is incapable of producing a true septicemia, although, in my opinion, the blood may be unable to sterilize a localized focus of infection or to kill those bacteria gaining access to it for brief periods.

The laboratory may aid in the treatment of focal infection by the careful preparation and administration of autogenous bacterial vaccines. If one could be sure that the secondary foci are maintained by constant infection from the primary foci, the removal of the latter would be all that is essentially required in treatment. Unfortunately, the infection may be so well established in the secondary foci that removal or drainage of the primary lesions has little or no direct influence on recovery. For this reason, drainage or extirpation of the secondary foci may be of equal importance; but when this cannot be done, it is sound practice to include the careful administration of a properly prepared autogenous vaccine as part of the treatment in an attempt to aid in the walling off or eradication of the secondary bacterial deposits. Even in cases without clinically detectable secondary foci, especially apical abscesses and chronic sinusitis, it is sometimes wise and well to include the administration of from four to six doses of autogenous vaccine for prophylactic purposes in aiding the eradication of clinically latent or undetectable secondary lesions.

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RETRODISPLACEMENT OF THE UTERUS DURING PREGNANCY AND THE PUERPERIUM

AN ANALYSIS OF ONE THOUSAND PRIVATE CASES *

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Every study of any considerable number of cases has shown that approximately 20 per cent of women have retrodisplaced uteri. The importance of retrodisplacement as a pathologic entity has been overemphasized, and there can be no doubt that far too many operations are being done for its correction. That it has some influence in the causation of sterility and of abortion is true, but this is much less than is commonly believed, and is made use of to too great an extent as a reason for retrodisplacement operations. We do not intend in this report to discuss the operative treatmet of retrodisplacement. We shall deal only with the question of retrodisplacement during pregnancy and the puerperium. This report concerns only a series of private patients. Ward patients have been excluded from consideration. We desire to show the incidence and management of retrodisplacement in women who are not subjected to the necessity of hard work and

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who have had careful prenatal observation. The lesser frequency of backward positions among these women may, we believe, be ascribed at least partially to these conditions.

We have examined the histories of 1,000 private cases in order to ascertain the number of women who had retrodisplaced uteri when first seen, and the number who had retrodisplacement after labor, either as a recurrence of a backward position known to have existed before, or as a newly acquired retrodisplacement.

We have as a routine ascertained in all cases of pregnancy, unless the period of gestation was so far advanced at the first visit that the uterus had already risen out of the pelvis, whether the uterus was retrodisplaced or not. In all cases in which a retrodisplacement was found, subsequent examinations have been made, in order that we might know whether the uterus had spontaneously corrected its position and risen above the promontory. It is extremely important that one should know this, as incarceration of the uterus below the promontory must inevitably lead to abortion or to serious discomfort or possibly danger to the prospective mother.

In women who gave no history of abortion, either primiparas or multiparas, our rule has been to do nothing to the retrodisplaced uterus. We have assured ourselves primarily of its mobility, and thereafter by periodic examinations determined that it had risen out of the pelvis or that it was prevented from doing so by the promontory. Should the latter event occur, or appear likely to occur, the uterus has been manually corrected. For this, manual reposition has ordinarily sufficed. Where this has failed, the maneuver of Schulz is used, the posterior cervical lip being grasped with tenaculum forceps, on which traction is made, while with the vaginal fingers pressure is made upward on the fundus. As soon as the fundus passes the horizontal plane the cervix is pushed backward, the tenaculum removed, and the fundus is pushed forward by one hand abdominally while the other keeps the cervix back. In the majority of cases this simple means suffices. After this a pessary of suitable size is placed, to remain until the uterus is too large to reenter the pelvis. The woman is asked to remain in bed two days and is given one-half grain (0.03 Gm.) of codeine at once and another in the evening. These maneuvers are usually done in the afternoon or late forenoon.

TABLE 1.—*Series of Private Patients*

Total number	1,000
Retrodisplacement during pregnancy or puerperium	188, or 18.8%
Primiparas	86
Multiparas	102

Should the procedure just described fail to correct the position, we attempt again to correct it, this time in the knee-chest position, the vagina being filled with air. Pressure may be made on the fundus vaginally, or, should it seem that pressure applied at a higher level than is possible vaginally may be of use, it may be done rectally. If rectal pressure is made, one should be careful not to use force enough to injure the rectal mucosa.

In one case observed recently, after both dorsal and knee-chest position and vaginal and rectal manipulation had failed, it seemed that reposition under anesthesia should be tried. Prior to doing this, the woman was asked to assume the knee-chest position several times a day, and she was carefully shown what the knee-chest position meant. After four days she returned with the uterus in normal position.

Should all attempts fail, an attempt at correction under anesthesia may be made. In this series we have not had to resort to that expedient.

It would seem that the manipulation which is sometimes needed to correct the position of the pregnant uterus might cause abortion. In the series now reported, we have had but one instance of this. The pregnant uterus is tolerant of trauma to a degree that is sometimes trying when an urgent reason exists for emptying it. This is no reason, however, for being other than as cautious and gentle as possible. Manual reposition is needed in about 30 per cent of the cases of retrodisplacement of the pregnant uterus.

TABLE 2.—*Time of Retrodisplacement*

Retrodisplacement during pregnancy	55
Retrodisplacement at 12th day post partum	59
Retrodisplacement 8 weeks post partum	114, or 14.4%

Our opinion, based on the series of cases here reported, as well as a larger number which preceded this series in the practice of one of us, is that retrodisplacement is a far less important cause of sterility than is commonly believed. We have, indeed, seen cases in which correction of a retrodisplacement and the maintenance of the uterus in anteflexion for a time has been followed by pregnancy; but these have been few. One such is under the care of one of us as this report is written. It may be said, therefore, that sterility from this cause may occur but that it is decidedly not the rule. It is entirely proper, if other and more effective causes of sterility have been excluded, to correct the uterus manually and to maintain its anteflexed position by means of a pessary for a few months, with the hope, rather than the expectation, that pregnancy will occur. This will give the woman the satisfaction of knowing that this possibility has not been neglected. It is not proper to operate for the surgical correction of a retrodisplacement, to relieve sterility, when no other reason for the operation exists. The retrodisplacement as a possible cause for sterility may just as effectively be excluded by pessary treatment for a few months. Particularly should such operations not be done without thoroughgoing efforts to discover the actual cause of the sterility, including an investigation of possible male as well as female causes. That we have no prejudice against operation where indicated is evidenced by the fact that, included in a considerable amount of operative gynecology which we constantly do, are a reasonable number of operations for retrodisplacement. Our attitude toward operations for retrodisplacement at any time is a conservative one.

Retrodisplacement is frequently charged with being the cause of abortion. This is undoubtedly true in a small proportion of cases. We have seen a number of women in whom one or more abortions have occurred, who have successfully gone through pregnancy when their retrodisplaced uteri were held in anteflexion by a pessary until the growth of the uterus rendered a resumption of the backward position impossible. We have also seen at least as many who aborted in spite of such precautions. It would appear that, although retrodisplacement may operate as an occasional, not particularly frequent, cause of abortion, its importance as a causative factor should not be overestimated.

Certainly, operations for the correction of retrodisplacement should not be frequently done for the purpose of preventing abortion.

Prevention and correction of retrodisplacement in the puerperium is an important part of practical obstetrics. Some supervision of the process of involution is quite fairly a part of the obstetrician's activity. Our plan is as follows: On the third day the woman is allowed a back rest at a low elevation. This facilitates gravity drainage from the uterus. She is also asked to lie on her face twice daily for ten minutes at least each time, or oftener and longer should she care to. If engorgement of the breasts renders this very uncomfortable, it is deferred a day or two. This causes the force of gravity for at least a short time to cause the uterus to fall forward. It also helps to dispose of the lochial pool at the upper end of the vagina, which, in the face position, tends to flow out. This aids the process of involution, which is the process of restoring the uterus to its normal nonpregnant state. A proper involution is of distinct value in aiding the uterus to escape the abnormalities of the puerperium, of which retrodisplacement is one. On the tenth day she gets out of bed, and usually goes home on the twelfth. At the time of discharge from the hospital, an internal examination is made to ascertain the position of the uterus. This is done with gentleness in order to disturb the genital tract as little as possible. Should the uterus be found retrodisplaced, the woman is asked to assume the knee-chest position twice daily for at least ten minutes on each occasion. We assure ourselves that she knows what the knee-chest position is, either personally showing her how it should be done, or by having this done by a nurse who, we are certain, knows what the knee-chest posture is. Women who leave the hospital with retrodisplaced uteri are asked to return for examination in six weeks; others, in eight weeks. Should the uterus in six weeks still be retrodisplaced, it is reposited manually, and a pessary is given which is worn for eight weeks. Ten days after this has been put in she returns to allow us to see whether the uterus is held properly by it, again in a month, and finally in two months, at which time the pessary is removed. We regret that our follow-up in most cases does not extend beyond two months after labor. In a series made up wholly of private patients, it is not as easy to demand many visits over a long period of time. Again, the essential observations that must be made during pregnancy demand so much time that a limitation is placed on the number of women who can be seen for other purposes. Observation of a large number of pregnant women, conscientiously done, is a time-consuming task.

Of the 1,000 women whose histories form the basis of this report, it was found that 188, or 18.8 per cent, had retrodisplacement while under observation during pregnancy or the puerperium. Of these, eighty-six were primiparas and 102 multiparas. Of this number, forty-eight had been examined at some time prior to pregnancy. Thirty-one of these had a retrodisplacement, and seventeen were normal. In Lynch's report of 761 cases from the University of California Clinic, the incidence of retrodisplacement was 42.2 per cent. He states, however, that in a series of 100 private cases the incidence of retrodisplacement was 22 per cent. The frequency that we have found, 18.8 per cent, would therefore not differ widely from the frequency in his private patients. Apparently there is a greater likelihood of retrodisplacement in women who do hard work or who cannot have an adequate period of rest during the puerperium. The great majority of the women composing this series have been able to be relieved of stress during the first few weeks following labor, and very few have at any time done hard physical work. Involution should not be considered as complete until eight weeks have passed. It is reasonable to suppose that the heavy subinvoluted organ will be restrained with more difficulty by its supports from assuming a backward position than the uterus that has completely returned to its nonpregnant state. Our figures as to retrodisplacement in pregnancy probably do not show the whole number of women who had retrodisplacement in the first trimester. Forty per cent of our patients were seen after the uterus was sufficiently large to have risen out of the pelvis. Undoubtedly some of these had had retrodisplacement at the beginning of pregnancy. Could these be included, the number would be somewhat greater.

In fifty-five of our cases we had to deal with the retrodisplaced pregnant uterus. Only five of these patients complained of symptoms, in two cases spotting, in two cases bladder pressure, and in one case backache.

In sixteen of these cases, manual reposition and the use of a pessary were resorted to. In the remaining thirty-nine, the uterus spontaneously corrected itself. In all cases we assured ourselves by early and frequent examination of the mobility of the uterus, and of its ultimate assumption of the normal position. In most of them the knee-chest position was also used. In four of these cases, abortion occurred. In a series of fifty-five retrodisplaced pregnant uteri this is an incidence of abortion of 1 in 13.7. The usual quoted ratio of abortion to the total number of pregnancies is 1:5. Adair, whose studies of maternal welfare are probably as extensive as those of any one in this country, says that 1:3 plus is probably nearer the truth. So far, therefore, as such a limited number may show, it would not appear that a greater danger of abortion exists when the uterus is retrodisplaced. We do not insist on this, as the number of cases is too small. It agrees, however, with the impression which clinical work has given us, that retrodisplacement does not increase the risk of abortion provided an intelligent vigilance is maintained at all times with manipulative intervention carefully done when needed.

TABLE 3.—*Retrodisplacement During Pregnancy*

Total number	55	
Number complaining of symptoms		5
Spotting	2	
Bladder pressure	2	
Backache	1	
Number treated by reposition and pessary		16
Aborted	4	

It is important, should spontaneous correction of position not occur, that manual reposition be done before the uterus becomes so large that it is difficult to cause it to pass the promontory. Should correction not occur spontaneously, or be done manually, the increase in the length of the long axis of the uterus will eventually cause the cervix to be pressed against the bladder base and urethra, so that urination may be rendered impossible.

One of us has seen a woman, a patient of another physician, because of inability to urinate. The bladder was distended so that it rose to a point midway between the symphysis and the umbilicus. There was a retrodisplaced pregnant uterus of four months, incarcerated

under the promontory with the cervix pressed firmly against the urethra, which it compressed against the symphysis. After the bladder had been emptied with a catheter, manual reposition was done and the woman went to term.

Of the fifty-five, forty-nine reappeared for examination eight weeks after labor. In thirteen of these, the uterus was in the forward position. Of these thirteen, eight were primiparas. An impression exists among the public, and to some extent among physicians, that pregnancy will cure retrodisplacement. Our opinion has been that this is an error. The observation just noted, however, would seem to indicate that in a very small proportion of cases this may be true. It should be noted, in considering this, that women who have had retrodisplacement during pregnancy have usually been advised, on leaving the hospital, even though the uterus should be in the forward position, to use the knee-chest position as a prophylaxis. This may have had an influence in causing these apparent recoveries.

Of the entire series of 1,000, there were fifty-nine who showed retrodisplacement on the twelfth day after labor. These were all advised as to the use of the knee-chest position. Twenty-four of them, on reexamination six or eight weeks after labor, showed the uterus in normal position. Of this group, then, 40 per cent were relieved by simple postural treatment. The importance of determining the position of the uterus at the end of the stay in the hospital would appear to be evident. The figures, also, seem to show that 6 per cent of women show retrodisplacement as early as the twelfth day.

The postural treatment of backward displacement in the puerperium is, then, of distinct value and should always be tried. We have used the simple knee-chest position exclusively. It is essential, as has already been emphasized, that it be properly done. We have tried, perhaps over too brief a space of time, the so-called monkey walk and other modifications of the knee-chest position. Theoretically, this exercise seems sound; but practically it has been difficult to get patients to make use of it. Even granting lesser efficiency for the knee-chest position, which we are not prepared to do, it would be better to employ a method which patients will use regularly rather than one which may be more efficient but which they will not carry out. There seems to be no doubt that postural exercises correct a considerable part of retrodisplacements following labor.

At the end of eight weeks there were 144 women who showed some degree of retrodisplacement. In only nineteen of these cases was there any definite complaint by the patient; that is, a complaint of sufficient degree to have been noted in the record. Nine of these complained of bleeding caused by subinvolution, and ten reported backache.

Not all of these were treated. Many women in whom the uterus was merely vertical, not inclining backward, were let alone. Again, in some instances in which the retrodisplacement occurred in multiparas who were known to have had retrodisplacement before without symptoms, and in whom involution had taken place satisfactorily, no treatment was instituted. If a woman is well and free from symptoms, our most important object has been attained. Compared with the well being of the woman, the presence of a forward or a backward position is of little moment, and many women pass through life with retrodisplacements from which they have no discomfort.

Reposition and the use of a pessary will relieve the great majority, at least for a sufficient period of time to allow of a satisfactory involution.

Eighty of the 144 seen at this time were actively treated. In seventeen of these eighty, permanent relief was not obtained, as was evidenced by examination at a later date. Pessary treatment therefore cannot be looked on as a permanent cure in all cases. Recurrence of retrodisplacement seems more likely in a woman in whom it existed before or during pregnancy than in one in whom the uterus was normally placed. However, involution will probably be better if the uterus is held forward while it is in progress, as the prevention of bending or kinking of the veins of the broad ligaments decreases the tendency to passive congestion of the uterus. Careful maintenance of the normal position is of importance during the puerperium and aids a complete return to the normal nonpregnant state. Pessary treatment at this time, while of value for the reason just named, does not in all cases provide a permanent cure. We are concerned at this time particularly with the retrodisplacement of pregnancy and the puerperium. The permanent cure of retrodisplacement by operation is outside the scope of this report.

TABLE 4.—*Observations at Eight Weeks Post Partum*

Number retrodisplaced		144, or 14.4%
Complaining of something	19	
Bleeding (subinvolution)	9	
Backache or pain	10	
Actively treated	80	
Manual reposition, pessary, known to fail	17	

CONCLUSION

1. About one woman in five in a series of private patients (18.8 per cent in this series) had retrodisplacement during pregnancy and the puerperium.

2. Retrodisplacement during pregnancy, provided an intelligent vigilance is exercised, need cause little trouble. In 29 per cent of those seen by us, reposition was done and the uterus retained by a pessary. In the remainder, correction ensued spontaneously.

3. Fourteen and four-tenths per cent show a backward position at eight weeks post partum. Reposition and retention in the anteflexed position aids the process of involution but does not invariably cure the displacement permanently.

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Health in the Tropics.—In the tropics, as a general rule, for the greater part of the year the temperature of the air practically eliminates radiation as a means of effecting heat loss from the body, so that we have to depend almost entirely upon the perspiration for this purpose. Perspiration, being a very active process, means that more energy is required to bring about loss of body heat than would be necessary if radiation could have been brought into action, because radiation, being purely a physical process, demands much less work from the body than is needed for the active secretion of the sweat. Here, then, is the first extra call upon your daily supply of energy. You may try to make a saving by adapting your clothing to the altered conditions with the object of assisting the skin in its work; but you can do really very little in this direction, and you are faced with the alternative of providing this extra energy from that allotted to your conscious activities or from your reserve. The latter course will surely lead to disaster.—J. Balfour Kirk.

POSTPUERPERAL MORBIDITY

A STATISTICAL PRESENTATION OF ONE THOUSAND CASES *

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With a view of stimulating the careful examination of the postpuerperal woman, I present a statistical study of 1,000 examinations made as soon as possible after the child was 6 weeks of age. The cases are taken consecutively from our files, only completed charts being used, and all cases being disregarded in which for any reason the data were insufficient to justify conclusions. A large majority of the cases represent material at the Elizabeth Steel Magee Hospital and my private service, charts being used even though the patient was first seen during labor or in the puerperal period provided the data were complete and they were found among the first thousand charts examined.

TABLE 1.—*Relaxation*

Nineteen per cent of all postpuerperal women have some perineal relaxation.	
Slight relaxation giving good support—no symptoms	12%
Marked relaxation	6%
With vesicocele	2%
With rectocele	4%
Overcorrection of perineal injury causing functional discomfort	1%

TABLE 2.—*Cervix with Regard to Laceration*

	Per Cent
Small unilateral	64
Small bilateral	12
Deep unilateral	4
Deep bilateral	3
Small stellate	6
Deep stellate	1
Total	90

No special classification is made that takes into consideration the number of children born to the individual; my aim is to represent conditions as found in this group regardless of parity. The large majority are multiparas, and operative deliveries are charged if such a history was obtained.

TABLE 3.—*Degree of Erosion*

	Per Cent
Erosion appreciable only when the vault of the vagina is distended by spreading bivalve speculum	50
Erosion of moderate degree	14
Erosion marked, involving both anterior and posterior lips	6
Total	70

My own patients are not unfavorably influenced by the use of pituitary extract, which is prohibited during the labor; manual or instrumental deliveries are permitted only in the presence of fetal distress, uterine inertia, or disproportion. Perineums are repaired immediately, catgut being largely employed. In uncomplicated cases the patient is kept in bed until the fundus is in the pelvis. Vaginal examinations are made when the patient leaves the hospital, except in rare instances in which a known existing pathologic condition necessitates investigation during the early part of the puerperal period. No definite date is set for the patient's discharge. As a rule they leave the hospital about the fifth day after they are allowed out of bed.

All perineums are repaired immediately after delivery, on the theory that a perineal injury large enough to see is large enough to necessitate suture. In many cases in which the previous birth or births did not occur in the hospital, the patients quoted the attendant as having said that no laceration occurred but there existed a definite relaxation. Under the heading of slight relaxation I have reported every relaxation of the vagina, the majority having been sutured, although a few are noted as having a slight degree of relaxation when no injury was noted at time of birth.

TABLE 4.—*Cervical Injuries Showing Erosions and Eversions*

	Per Cent
Small laceration:	
No erosion or eversion	16
No erosion with eversion	1
With erosion, no eversion	59
With eversion	2
Deep laceration:	
No erosion or eversion	1
With eversion	2
With erosion, no eversion	1
With eversion	8
Total cervical injuries with erosions	70
Cervical injuries healed, no erosions or eversions	20
Total	90

TABLE 5.—*Method of Delivery in Cases Showing Cervical Injuries*

	Per Cent
Spontaneous deliveries (no pituitary extract)	74
Forceps deliveries:	
High	1
Mid	2
Low	6
	9
Version elective on account of fetal distress or malpositions, etc.	2
Version necessary on account of slight disproportion	5
	7
Total	90

It is interesting to observe the conditions of the cervices. In a total of 90 per cent it was at least possible to tell that the cervix had been subject to some slight tearing at the time of labor. By small unilateral laceration I mean the cervix which on examination shows some widening of the os, with sufficient indentation to show definitely that some tear had taken place.

TABLE 6.—*Method of Delivery in Cases Showing Cervical Erosions*

Spontaneous delivery (no instruments or drugs)	62%
Pituitary extract used; full dilatation; uterine inertia; fetal distress; suspected gonorrheal infection	1%
Forceps, high	1%
Mid	2%
Low	1%
Scanzonian maneuver	3%
	7%
Total	70%

All patients were considered as having had varying degrees of erosions when, on examination with a bivalve speculum, the vault of the vagina being distended, an eroded area could be seen. Seventy per cent of women

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

who had been delivered showed granulated areas, varying from the smallest possible size to a degree that involved the entire presenting part of the cervix. Only 20 per cent of cases showing laceration fail to show an accompanying erosion; and while it is undoubtedly true that some of these erosions would heal in time, it

TABLE 7.—*All Retropositions (22 per cent)*

	Per Cent
Spontaneous deliveries	10
Instrumental deliveries	12
Afebrile puerperium	5
Febrile puerperium	17

is also true that some of the milder erosions become well marked if an examination is made some months or years later.

TABLE 8.—*Malpositions of Uterus, Involution Complete*

Acute anteflexion		1%
Afebrile puerperium	1	
Febrile puerperium	0	
Retroposition		16%
Afebrile puerperium	5	
Febrile puerperium	11	
Retroposition and adhesions		5%
Afebrile puerperium	0	
Febrile puerperium	5	
Retroposition (frozen pelvis)		1%
Afebrile puerperium	0	
Febrile puerperium	1	
Total		23%

That the large majority of cervices are injured even in a spontaneous delivery is shown by the fact that 74 of the 90 per cent were delivered spontaneously and

TABLE 9.—*Size of Uterus at End of Six Weeks with Relation to Temperature During Puerperium*

Subinvolution uncomplicated		5%
Afebrile puerperium	1%	
Febrile puerperium	4%	
Subinvolution with retroversion		16%
Afebrile puerperium	1%	
Febrile puerperium	15%	
Subinvolution with laceration and erosion of cervix		14%
Febrile puerperium	12%	
Febrile puerperium	2%	
Subinvolution with fibroid present		1%
Cases of subinvolution with spontaneous delivery, afebrile puerperium and no laceration or erosion		0%

in the case of multiparas gave no history of the use of pituitary extract or operative delivery. In all forceps deliveries and all versions there was evidence of cervical trauma.

TABLE 10.—*Remaining Kidney Impairments* *

	Per Cent
No symptoms during pregnancy	2
Enlarged palpable kidney during pregnancy	2
Enlarged palpable kidney during pregnancy:	
With palpable ureter	1
Without palpable ureter	1
Enlarged palpable kidney during pregnancy with clumped pus:	
No casts	6
With casts	1
Stones in kidney or ureter	2
Abscess of kidney necessitating removal	0.1

* Only 251 cases available. Casts, granular or hyaline; clumped pus cells (catheter specimen); palpable ureter; enlarged, palpable or sensitive kidney with or without subjective symptoms.

Cervical erosions were found in spontaneous deliveries, but the percentage increases with intervention, as to both frequency and degree.

A total of 22 per cent of the women examined showed some malposition of the uterus. It is very noticeable that this malposition is definitely increased in febrile cases, 17 per cent of them representing febrile cases.

Febrile cases against afebrile cases show a very large increase of subinvolution. Of the 21 per cent found, 19 per cent represent cases in which there was some elevation of temperature during the puerperal period.

The data were incomplete regarding the remaining kidney impairments. A study of 251 cases disclosed some remaining impairment in 15.1 per cent.

CONCLUSIONS

1. Postpuerperal morbidity occurs much more frequently than is generally supposed. If evenly divided, every postpuerperal woman would be a sufferer in at least one particular.

2. A fully dilated cervix is one that is retracted over the fetal head and not one that is spoken of as dilatable.

3. Operative deliveries of any character seem to increase the postpuerperal morbidity, and are to be condemned even though we entirely disregard the immediate danger of infection, except where absolutely necessary to preserve the life of mother or child.

4. Temperatures during the puerperal period, even though slight, leave in their wake some definite evidence of injury having been done.

5. The now existing postpuerperal morbidity would seem to justify a return to rational nonintervention in the normal woman and the avoidance of all measures to hasten delivery, except in the presence of fetal distress, uterine inertia or disproportion.

6. Attention to cervical injuries will markedly lessen the discomfort of the patient, and in cases of erosion may have an influence on decreasing malignancy.

7. Postpuerperal examinations should be made after each delivery.

121 University Place.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DANFORTH AND GALLOWAY, AND MILLER

DR. CHANNING BARRETT, Chicago: Papers of this kind furnish evidence to help mold or contradict the statement that a uterus can as well be in one position in the abdomen as another. There is no such thing as a normal retrodisplacement. I do not assert that a woman who has retrodisplacement cannot become pregnant; but whereas a certain percentage become pregnant, there is quite a percentage perhaps of retrodisplacement that would need some corrective position to help them to become pregnant. The great number of patients that become pregnant after correction of the position indicates that retrodisplacement and the conditions from which retrodisplacement develops are factors in sterility. When a patient becomes pregnant with retrodisplacement, she should receive careful attention until the uterus has gone forward and becomes too large to go into the backward position again. She should be seen often. The knee-chest position should be used until the position is changed by manual reposition, if possible; but that there are many patients with retrodisplacement who still become pregnant who have adhesions. In most patients the uterus can be got out of the retrodisplaced position and the patient go to term if cared for early, but a certain number will develop an incarceration if this attention is not given and there is a great degree of tolerance in regard to the uterus. One will stand much tolerance, another very little. It requires little incarceration to make one patient perform; another will go out in a term of four months with marked incarceration, and yet replacement at that time allows the woman to go to term.

But replacement at that time may require something more than manual manipulation in the knee-chest position; it may require the abdomen to be opened, and numbers of those cases have gone to full term. If retrodisplacement were a normal position, the patient would be entitled to be let alone. The fact that it is abnormal is the reason that gynecologists can carry on some manipulative treatment to correct the position. One of the most important things that can be done at the time of childbirth is to see that the pelvic floor is in good condition so that involution will take place well, not merely involution of the uterus but involution of all the pelvic organs. Dr. Miller's statistics showed plainly that all pathologic conditions favored the development of retrodisplacement. There are very few tears of the perineum that make a good opening through which to repair the pelvic floor, any more than traumas of other regions. To make a good, thorough repair of the pelvic floor in a large percentage of cases there should be a certain lifting of the flaps until those structures that need to be repaired may be seen and accurately brought together one to the other.

DR. FRANK W. LYNCH, San Francisco: Some years ago a series of studies on the frequency and meaning of retroposition disclosed 44 per cent of displacements of the second or third degree during the first year after delivery in 1,251 women delivered in the University of California Hospital. Sixty-six per cent of these displacements were found in the first four months after delivery, while 34 per cent did not develop until from four to twelve months after delivery. Seeking to find the meaning of retropositions, I followed 460 of these women from one to eight years after delivery. By excluding all cervical injuries and relaxations of the floor, there remained 310 women whose only pathologic condition was a retrodisplaced uterus. Of these, approximately 50 per cent had symptoms and the remainder had none. Both Stacy, who studied 1,000 virgin women, and Polak, who studied 2,000, found congenital retroposition in 20 per cent of the series. In my opinion these 20 per cent of cases represent practically all of the women who had no symptoms from the retrodisplacement after childbirth. The retrodisplacement was merely a return to the former symptomless position. The other half of the 40 per cent of retrodisplacements, however, are those who developed retroposed uteri from fascial injuries in the pelvic floor; and this displacement, therefore, amounts to a pathologic condition. These cases correspond to the 50 per cent with symptoms. Therefore I believe that retrodisplacements do not necessarily give symptoms. There are modifying features. It was found necessary to operate in only fifty in the entire series of some 500 cases. If approximately 20 per cent of women come into pregnancy with congenital retroposed uteri, and another 20 per cent who have retrodisplacements as a result of trauma of previous pregnancies, we may expect a tremendous number of retrodisplaced uteri in any series of early pregnancies because the egg is most likely to be implanted on the posterior wall in any uterus that is retrodisplaced. In these cases, the uterus is prevented by nature from incarceration. The development of the anterior uterine wall pulls the uterus out of the pelvis by a method the reverse of that seen in pregnancy after anterior fixation. Certain it is that in an obstetric experience of twenty-five years, I have never seen a case that I regarded as an incarcerated uterus in pregnancy save in the presence of preexisting adhesions. I have always felt that in replacing retroposed uteri, as I did only in my earlier cases, I was far more likely to cause more trauma as a result of my manipulations than the woman's chance of having incarceration.

DR. JOHN O. POLAK, Brooklyn: These papers are most interesting from an obstetric standpoint. In the first place I wish to add my mite to the retroversion question and help distinguish between the two conditions; i. e., the congenital and the acquired. In 2,000 cases that we analyzed in our clinic at the Long Island College Hospital we found 18 per cent of congenital retroversions in nulliparous women, while we have found about 35 per cent of retroversions of the uterus in our postpartum follow-up clinic. When these women are discharged from the hospital the exact position of the uterus is marked, and it is surprising when we follow up these cases to find that a patient who is discharged from the hospital with a uterus in perfectly normal position will come back in four or six weeks with a retroversion. Why? Because it takes at least twelve weeks for involution to be completed. Obstetric patients get out of bed too soon. While in bed they should be taught to practice certain routine exercises to empty the pelvic veins; for unless the involution is well advanced and the veins emptied, the uterus is soft and flabby; and if the patient is constipated and the pelvic floor muscles have been impaired, immediately, with the act of defecation, retroversion takes place and can never be corrected until the patient is turned upside down. As a matter of actual practice we are following a series of exercises that begin with the second day of the puerperium. The patient is placed on the abdomen for three or four hours of each twenty-four. On the third or fourth day she is started with abdominal exercises. On the sixth day she is taught the knee-chest position, and as soon as she gets out of bed she takes the "kangaroo walk," or what we are using now is what as known as a "mule kick," which is a stationary affair. Instead of the patient's walking on all fours, she simply stands on all fours and raises her feet and hips as a "mule kicks," a motion which antroverts the uterus. We have found that we can reduce postpartum retroversious to 3 per cent by proper treatment for six or eight weeks. The reposited uterus should be followed by a pessary support. After the uterus is reposited, it should be retained in this position with a well fitting pessary. We have found in the study of our postpartum cases that many come back to us in five, six or eight weeks, depending on how frequently we can get them back through our social service system with exudates in the broad ligaments. Every exudate in the parametrium interferes with ureteral drainage, and every interference there brings about a urinary stasis which predisposes to colon infection.

DR. OTTO SCHWARZ, St. Louis: I wish to call attention to one point that I have noticed in examining patients six weeks post partum. If the uterus is retroverted and brought forward, I find it definitely larger than in those cases in which the uterus has been in normal position. I feel that this enlargement is due to two conditions—chiefly edema and chronic passive congestion, because after the uterus has been kept in position for only one week the diminution in size during this time is very striking. Dr. Polak has stated that involution of the uterus does not fully take place until at least twelve weeks post partum. An even longer time is necessary for the involution of the circulatory system of the uterus. By keeping the uterus well forward with a pessary, not only will the involution of the uterine muscle be hastened, but also the involution of the circulatory system will be more complete. I believe that chronic subinvolution which involves chiefly the circulatory system is responsible for many of the menorrhagias that take place at or near the menopause, and therefore any precautions that will help to improve the involution will do much to prevent subsequent uterine disease.

DR. HAROLD A. MILLER, Pittsburgh: I feel that it is essential, instead of urging a woman to carry on in the first stage of labor, to give drugs of some character that will assist her in arresting the pain, as it takes a certain amount of time for the cervix to dilate. I took occasion during the last two months while this paper was in the course of preparation to ask the women who came to the clinic for the first time if they had had postpuerperal examination in their previous labor. Less than 1 per cent of the women who came to the clinic who had previously given birth to children had had a postpuerperal examination. I feel that it is essential and that we cannot place too much emphasis on the fact that it may be a way of attacking our cancer problem.

Inheritance.—All the evidence there is points to the fact that in the gamete the chromatin alone possesses those attributes of constancy of proportion and behavior which would appear to be necessary to satisfy the theoretical requirements of an idioplasm.—Crew, F. A. E.: *Brit. M. J.*, Aug. 14, 1926.

VIABILITY OF B. ACIDOPHILUS AND B. BULGARICUS IN THE HUMAN INTESTINE*

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Considerable interest has been aroused concerning the effect of milk feeding on intestinal conditions, from the standpoint of change in intestinal flora and of clinical results. The observations of Metchinkoff and his contemporaries initiated this interest. Published reports of their experiments stimulated a number of investigators to further study of intestinal micro-organisms, particularly the group of gram-positive bacteria belonging to the genus concerned. These investigations show that persons living on a high milk diet often develop an intestinal flora which is composed mostly of gram-positive rods of the *B. acidophilus* and *B. bifidus* types, more or less to the exclusion of the putrefactive and proteolytic types.

Metchinkoff's observations were first made on the peasants of the Balkans. The main article of their diet is sour milk prepared by the fermentation of milk with a mixed culture of micro-organisms. As the predominating species in the sour milks studied by him and his pupils was *B. bulgaricus,* and since they recovered what appeared to them to be the same organism from the feces of these peasants, his deduction was that the ingested bacteria actually multiplied in the intestines. His conclusions have been challenged in more recent years.

Rettger and Cheplin [1] applied the milk feeding principle, but employed a milk cultured with *B. acidophilus* instead of *B. bulgaricus*. A very comprehensive review of the literature of these related investigations has recently been given by Kopeloff [2] in his book, "Lactobacillus Acidophilus," in which he has also published results of his own researches. This book supports the observations made in the Yale laboratory and more recently in other institutions; namely, that *B. bulgaricus* does not survive passage through the intestinal tract, while *B. acidophilus* is not only endowed with this ability but will readily multiply in the intestine following the use of an appropriate diet.

The main purpose of the present paper is twofold: (1) to add further experimental evidence to the somewhat isolated claims that *B. acidophilus* can be recovered in large numbers from the feces of persons ingesting the organism in the form of milk culture or milk suspension, and that *B. bulgaricus* when similarly administered fails to appear in the feces; and (2) to emphasize further certain clinical results that follow the use of acidophilus milk, or milk suspensions of *B. acidophilus*.

The chief criterion of acidophilus milk therapy is whether or not the subject shows clinical improvement, or, in other words, is deriving actual benefit from the use of the milk. The improvements that have been observed by others have been explained as being due to the appearance of large numbers of *B. acidophilus* in the intestinal tract, and a corresponding decrease in toxin-forming bacteria. In the light of such an explanation, any marked clinical improvement should go hand in hand with the appearance of large numbers of viable *B. acidophilus* in the feces.

As a pronounced reduction in the number of gas-producing organisms and of bacteria which appear in gram-stained slides other than *B. acidophilus* requires more intensive acidophilus treatment, in my experience, than the recovery of appreciable numbers of viable *B. acidophilus* by the established plating method, the search for evidence of implantation was confined in this investigation to the plating method.

Acidophilus milk therapy must, of course, be judged by its action on the patient or subject. The laboratory check-up of such results may be determined by the presence or absence of considerable numbers of typical *B. acidophilus* colonies in fecal platings in which a medium is employed which is preeminently adapted for growth of this organism. With this as our major premise, it follows that acidophilus-like or bulgaricus-like organisms which will not be viable in considerable numbers in the feces when they have been fed in a milk medium cannot produce clinical improvement. Following this line of reasoning, the controversy between the supporters of *B. acidophilus* therapy and those in favor of *B. bulgaricus* therapy narrows itself down to this question: Which of these species will establish itself in the intestinal tract?

The investigation on which this paper is based covered a period of almost two years and comprises twelve experiments. These can be arranged in four groups, for convenience and simplicity.

Two preliminary control experiments constitute the first group. In the first of these sweet milk was employed as the test diet, and in the second milk soured by *Streptococcus lacticus*.

The next group consists of a number of experiments in which milk soured with several strains of typical *B. bulgaricus* was employed as the test diet.

The experiments in group 3 were similar to those in group 2 except that strains of typical *B. acidophilus* were substituted for the *B. bulgaricus* strains.

The milk used for feeding in the fourth group of experiments was soured with several strains of borderline organisms; i. e., strains that appear to stand between *B. acidophilus* and *B. bulgaricus*.

Typical *B. acidophilus* is a gram-positive, nonmotile rod which produces a mild acidity (from 0.7 to 0.8 per cent titratable acidity) in sterilized milk in twenty-four hours' incubation at 37 C. when a good viable milk culture equivalent to from 3 to 5 per cent of the entire volume is employed as the inoculum. On casein-digest galactose agar [3] this species forms small sea-urchin-like colonies. The fuzzy edges of these colonies under the low power objective may be very marked and of the x type,[1] or show only a very few hairlike projections (y type). This species ferments glucose, galactose, levulose, lactose, sucrose and maltose, without exception, with acid but no gas production.[3]

Typical *B. bulgaricus* is a gram-positive, nonmotile rod, which develops a high titratable acidity (from 2.0 to 3.0 per cent) in milk in twenty-four hours or less at 37 C. when a small inoculum (less than 1 per cent of the total volume) is employed.

B. bulgaricus ferments glucose, galactose and lactose with acid production only. Colony formation in suitable agar is of the extreme x type.

A third type of organisms (mixed) in my collection, and in part referred to by other investigators, shows certain relationships to both of the species named above. They ferment maltose and sucrose, produce

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1. Rettger, L. F., and Cheplin, H. A.: The Transformation of the Intestinal Flora, with Special Reference to the Implantation of Bacillus Acidophilus, New Haven, Yale University Press, 1921.

2. Kopeloff, Nicholas: Lactobacillus Acidophilus, Baltimore, Williams & Wilkins Company, 1925.

3. Kulp, W. L., and Rettger, L. F.: A Comparative Study of L. Acidophilus and L. Bulgaricus, J. Bacteriol. 9: 357-395 (July) 1924.

colonies similar to those of *B. acidophilus* and *B. bulgaricus*, but develop considerable acidity in milk culture even when small inoculum is employed.

Attention is here called to the fact that considerable emphasis is laid by us on colony formation in the classification of these species. We believe that any organisms which do not in a measure at least approach the typical colony forms described should not be included among the species mentioned, regardless of other characteristics that they may have. In all of our isolation work with *B. acidophilus*, selections are made only from colonies such as have just been described.

The grouping of the cultures employed, with a brief history of each strain and summary of its characteristics, is given in the accompanying table.

All cultures included in the table ferment glucose, galactose and lactose, with acid production.

Cultures and Strains

Strain	Source	Colony	Levulose	Sucrose	Maltose
Typical B. bulgaricus Strains Employed in Experiments of Group 2					
Bn	Commercial culture	x type	0	0	0
B12	Department of Agriculture...	x type	0	0	0
B4	Department of Agriculture...	x type	0	0	0
B3	Department of Agriculture...	x type	0	0	0
G. V.	Human intestines	x type	0	0	0
Typical L. acidophilus Strains employed in Experiments of Group 3					
R-1-1	Rat	x and y type	Acid	Acid	Acid
4B	Rat	x type	Acid	Acid	Acid
Scav.	Human	x type	Acid∓	Acid	Acid
Intermediate Strains Employed in Experiments of Group 4					
B1	Department of Agriculture...	x and y type	0	+	+
B13	Department of Agriculture...	x type	0	0	+

The general procedure was the same for all experiments. Fecal platings were made before the feeding of the test culture began, and at intervals during the feeding period. Casein digest-milk powder-digest plus 1 per cent galactose was employed as the special medium, since this is adapted for colony growth of *B. acidophilus, B. bulgaricus* and closely related species. The results were not strictly quantitative. A heavy suspension of fresh feces was made in physiologic sodium chloride solution and loop-dilution agar plates made from this. Plates were incubated for forty-eight hours at 37 C., and the proportional numbers of *B. acidophilus* or *B. bulgaricus* colonies per plate determined. The milk cultures used for feeding were twenty-four hours old except when noted otherwise, and contained from 100 million to 500 million viable organisms per cubic centimeter.

At times the same subjects were employed in consecutive experiments, but in such instances a time interval was allowed between experiments until control platings of the feces showed no acidophilus-like colonies.

PRELIMINARY EXPERIMENTS, GROUP 1

The preliminary control experiments, in which whole sweet milk and *Streptococcus lacticus* soured milk were fed, had as an objective the determination of whether or not this type of diet over a comparatively short period could cause the development of any member of the *Lactobacillus* genus in the intestinal tract, as indicated by the fecal platings.

Eight normal persons (adults) drank 1 quart of whole sweet milk daily for a period of ten days. Fecal platings of six subjects made at definite intervals during the feeding and at its conclusion did not show any x type colonies. Satellite x type colonies were present on agar plates from the feces of two subjects. This peculiar colony development is found quite often in fecal platings. The tiny characteristic colonies are grouped around the colony of some other species, usually *Enterococcus*, in satellite formation. When transferred to milk, they do not as a rule develop. This type is apparently indifferent to any special feeding, as it may be found in fecal platings of some persons on an ordinary diet. It is deserving of further study. This species or type is so easily differentiated because of the peculiar colony arrangement that we feel its presence can be discounted in interpreting fecal platings when *B. acidophilus* or *B. bulgaricus* is fed.

While no exact record of defecations was kept during this experiment, seven of the eight subjects reported marked constipation at the close of the feeding period.

In the other experiment of this group, 1 quart of freshly soured *Streptococcus lacticus* milk was fed daily to seven persons for a period of ten days. No x type colonies developed in any fecal platings made during this feeding period. There was an increase in the numbers of streptococcus colonies on all plates. These were not *Streptococcus lacticus*, but probably *Enterococcus*. This conclusion is justified in that the organism fed grew very poorly at 37 C., its optimum being 24 C. All of the plates were incubated at 37 C. Furthermore, transfer of some of these colonies to sterile milk did not produce the typical *Streptococcus lacticus* curd at 24 C.; in fact, they barely developed at all at this temperature.

All subjects reported that bowel movements were normal; there was no tendency to constipation during this feeding.

GROUP 2 EXPERIMENTS

These group 2 experiments, six in all, constituted those in which a milk culture of typical *B. bulgaricus* was administered. One quart of a twenty-four hour *B. bulgaricus* milk culture containing approximately 250 million viable organisms per cubic centimeter was fed daily for periods varying from seven to ten days. The experiments of this group were not consecutive, but were usually separated by a *B. acidophilus* feeding. There were from four to eight subjects in each experiment. The cultures employed were G. V., Bn, B 12, B 4 and B 3.

Culture G. V. should be discussed at this time. This strain, which had all the ordinary characteristics of *B. bulgaricus*, was isolated from one of the subjects prior to beginning the feeding trials. There were a few x type colonies in fecal platings from this person which were very striking. He had drunk no sour milk for months previous to these experiments. The isolated strain curdled milk very quickly, developing the characteristic high acidity of *B. bulgaricus*. Fermentation tests indicated that this species would not ferment maltose.

Attention is called to this particular strain because it is the only one among dozens isolated from feces in this laboratory during the last five years which had the usual characteristics and gave the reactions of typical *B. bulgaricus*. Because of its source, its use in these experiments seemed to be of particular interest.

B 12, B 4 and B 3 were strains received from the Department of Agriculture and were labeled *B. bulgaricus*. Bn was a strain isolated from a commercial culture labeled *B. acidophilus*. This organism gave all the physiologic reactions and had the morphologic characteristics of typical *B. bulgaricus*.

Fecal platings of all subjects did not bring out any x type colonies at any time during the period of feedings. Strain G. V. did not even appear in platings of the feces of the person from whom it had been isolated. The subjects reported various reactions from a clinical standpoint. There was no person who noticed any increase in defecations; two reported increased constipation. Two suffered ill effects from the high acidity, one of these being compelled to drop out of the experiment.

These experiments strongly support the claims that typical *B. bulgaricus* does not appear in the feces after ingestion of this organism as a milk culture.

GROUP 3 EXPERIMENTS

Milk cultures of typical *B. acidophilus* containing from 100 to 200 million viable bacteria per cubic centimeter were used in the group 3 experiments. The daily dose for each subject was 1 quart. Three strains were used, and there were five experiments in all.

R-1-1 was a rat strain and had been carried in milk for four years. 4 B was another rat strain which had been isolated two years prior to this experiment. Scav. was a strain which had been isolated from a baby and had been employed as a milk culture for a year. R-1-1 was used in one experiment only. 4 B milk made daily in the laboratory was employed in one feeding; commercial acidophilus milk made by a dairy using 4 B as the starter was used in another experiment. Scav. was taken by the subjects in two experiments, the second about a year later than the first.

After the acidophilus milk had been taken for two or three days, fecal platings showed large numbers of viable *B. acidophilus*. The proportion of these colonies to the total colonies varied from 40 per cent to practically 100 per cent. The first feeding of the Scav. strain gave the highest percentages of *B. acidophilus* colonies. The second experiment with this strain did not give as startling results, but percentages were over 90. Feedings of three day old commercial acidophilus milk made with 4 B culture gave the lowest percentages of *B. acidophilus* colonies in fecal platings, from 40 to 80 per cent.

All subjects reported an increase in the number of daily defecations during acidophilus milk feeding. This was particularly noticeable when acidophilus milk prepared with the human strain, Scav., was employed.

This group of experiments warrants the conclusion that large numbers of typical *B. acidophilus* develop in the intestinal canal when ingested as acidophilus milk, and that they can be recovered by plating methods.

GROUP 4 EXPERIMENTS

Cultures B 13 and B 1 were employed in these experiments. These were strains that produced a high acidity in milk very quickly, but also fermented maltose with acid production. B 1 fermented sucrose, but B 13 did not. This last strain formed an extreme x type colony in agar, somewhat larger than any other culture used in these experiments. B 1 formed both x and xy type colonies. We have always felt that this strain was very closely related to typical *B. acidophilus*, although it came to us labeled *B. bulgaricus*.

Feeding experiments were carried out in the same manner as all others reported. Five subjects received B 1 and four were given B 13. All persons drinking B 1 milk showed from 90 to 95 per cent x type colonies at the end of the feeding period. Isolations from plates produced a culture identical with the one fed.

On the other hand, platings of feces from subjects receiving B 13 cultured milk showed no x type colonies, thereby indicating that this strain did not develop in or survive passage through the intestine.

COMMENT

It is apparent from the data presented in this paper that so-called *B. acidophilus* strains that are to be used for therapeutic purposes should receive careful preliminary study. The efficacy of acidophilus milk depends on whether it is cultured with typical *B. acidophilus* or an organism that has only some of the characteristics of this species. Too much emphasis cannot be placed on fermentation reactions. The conclusion is usually tenable that any member of the Lactobacillus genus which forms an x type colony in agar, but does not ferment maltose and sucrose, will not survive passage through the alimentary canal. On the other hand, not every member of this genus which ferments maltose will necessarily pass through the intestine and remain viable.

There is to some extent the same sort of relationship between members of the Lactobacillus genus as that which exists between members of the paratyphoid group. In other words, there are small gradations of difference between closely related forms of this genus which permit the selection of a series of different strains extending from the typical *B. acidophilus* to the typical *B. bulgaricus*.

In acidophilus milk therapy, care should be taken to select a typical strain that will develop in the intestine and appear viable in fecal platings. We believe that the gram-positive rods which ferment lactose and other sugars, with acid production (and sometimes gas), but which form solid colonies on agar, should not be included in either the typical or acceptable *B. acidophilus* or *B. bulgaricus* species.

A review of the recent literature indicates that *B. bulgaricus* will not develop in or survive passage through the intestine. The data reported in this paper give added support to these assertions. There may be isolated instances in which what appears to be typical *B. bulgaricus* has been recovered from the feces of persons after ingestion of this organism as a milk culture. Kopeloff [2] reports one such case. The isolation of our culture G. V. from human feces indicates that there is the possibility of finding a few *B. bulgaricus*-like organisms at rare intervals in the intestine.

However, feeding experiments with the G. V. strain give absolutely no support to the adherents of *B. bulgaricus* therapy. If any strain of *B. bulgaricus* should adapt itself to the intestine, it would certainly be logical to expect this particular strain to do so. As has been stated, after a fair and thorough trial, it has been found not to possess this property.

In judging the merits of any species of the *Lactobacillus* genus to be employed for therapeutic purposes, one should be conservative in drawing conclusions from laboratory tests alone. The most potent culture will probably be one that has all the characteristics of typical *B. acidophilus*, preferably of human origin. Its efficacy can be, and should be, determined by actual use on average normal persons. Platings of feces should be resorted to in every case to check up the clinical results of these tests before advocating the use of any particular strain for therapeutic purposes.

It is very improbable that any typical authenticated strain of *B. bulgaricus* will measure up to these requirements.

THE ACTION AND CLINICAL USE OF EPHEDRINE

AN ALKALOID ISOLATED FROM THE CHINESE DRUG MA HUANG*

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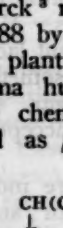
Ma huang (*Ephedra vulgaris* var. *helvetica*, family *Gnetaceae*) has been known in Chinese medicine for some 5,100 years.[1] It was one of the drugs tasted by Emperor Shen Nung (about 3200 B. C.). The Chinese use it as a diaphoretic, circulatory stimulant, antipyretic, sedative in cough, etc., and it has been incorporated into many famous prescriptions, including one for typhoid. The plant (fig. 1) is a low, practically leafless shrub, about 60 to 90 cm. high, which is sold freely in the vicinity of Peking. According to reports, it is indigenous to the sea coast and to the provinces of Chihli, Szechuan, Kansu, Shensi, Honan, Shantung and Kiangsu. It also grows in central Europe.

Ephedrine, the alkaloidal active principle, was first isolated in an impure form from the stems of ma huang in 1885 by G. Yamanashi,[2] working at the Osaka Experimental Station in Japan, and using the alkali-ether method. On Yamanashi's death, the study was continued and improved by Nagai, with the assistance of Y. Hori. Merck[3] reported that he separated the same alkaloid in 1888 by the same method, from the same variety of the plant. In 1923, Chen[4] reisolated ephedrine from ma huang by the ammonia-chloroform method. The chemical structure of ephedrine has been accepted as β-phenyl-β-hydroxy-α-methyl-ethyl-methylamine.[5]



Its synthesis has been studied by Schmidt,[6] Nagai,[7] and Späth and Göhring.[8] The racemic mixture of the synthetic product has been patented by Nagai under the name of methylmydriatin in England, Canada and the United States.[9] A review of the isolation, constitution, isomerism, properties, derivatives and synthesis of ephedrine and pseudoephedrine, with a complete bibliography, has been prepared by Chen and Kao, and will be published shortly in the *Journal of the American Pharmaceutical Association*.

* Read before the Section on Pharmacology and Therapeutics at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

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2. Nagai, N.: Ueber die Untersuchungen einer Base der chinesischen Drogue Ma Huang, Yakugaku Zasshi (Journal of the Pharmaceutical Society of Japan), 1892, no. 120, p. 109 (original in Japanese).
3. Merck, E.: Ueber Ephedrin, Berichte, 1893, p. 13.
4. Chen, K. K.: A Pharmacognostic and Chemical Study of Ma Huang, J. Am. Pharm. A. **14**: 189, 1924.
5. Ladenburg, A., and Oelschlägel, C.: Ueber das Pseudoephedrin, Ber. deutsch. chem. Gesellsch. **22**: 1823, 1889. Schmidt, E.: Ueber das Ephedrin und Pseudoephedrin, Arch. Pharm. **252**: 89, 1914. Henry, T. A.: The Plant Alkaloids, ed. 2, 1924, p. 346.
6. Schmidt, E.: Versuche zur Synthese des Ephedrins, Arch. Pharm. **243**: 73, 1905.
7. Nagai, N.: Ueber die Synthese des Ephedrins, Yakugaku Zasshi, 1909, no. 329, p. 739.
8. Späth, E., and Göhring, R.: Die Synthesen des Ephedrins, des Pseudoephedrins, ihrer optischen Antipoden und Razemkörper, Monat. Chem. **41**: 319, 1920.
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PHARMACOLOGIC ACTION

The outstanding effects of ephedrine are due to stimulation of the sympathetic nervous system and are qualitatively identical with those of epinephrine. As these effects are essentially the same in isolated organs or after destruction of the central nervous system, the drug acts peripherally like epinephrine, and is a true "sympathomimetic amine." In addition, it stimulates the central nervous system and depresses the heart, but these effects are ordinarily elicited only by toxic doses.

Action on the Circulation.—Rise in blood pressure following intravenous injection of ephedrine was first observed in rabbits in 1917 by Amatsu and Kubota.[10] We[11] demonstrated similar effects in other animals in 1924. We also found that ephedrine raises blood pressure in man when it is taken by mouth. We and also Chen and Meek[12] showed that the rise in blood pressure produced by ephedrine is much more prolonged than is the case with epinephrine. A single intravenous injection of from 1 to 10 mg. per kilogram often raises the pressure of an anesthetized dog by 100 or more millimeters of mercury, and maintains this rise for at least fifteen to twenty-five minutes. The rise in blood pressure does not strictly depend on the quantity of ephedrine given. Equally important factors are the kind of anesthetic and the condition of the animal prior to its administration. Under phenobarbital anesthesia, the rise seems to be higher than under morphine-urethane anesthesia. With ether anesthesia a primary rise may be followed by a fall with recovery. The initial level of blood pressure has a bearing on the response. If the blood pressure is very low, there is observed a less striking rise, and sometimes the blood pressure falls even after small doses. In the decerebrated dog, the dose that ordinarily raises blood pressure may lower it. Other operative procedures, such as thoracotomy and laparotomy, may lessen its power to raise the blood pressure. By repeated intravenous injections of the same dose of 1 or more mg. per kilogram, the first one is the most effective in raising and sustaining the blood pressure. Subsequent injections become more and more ineffective not only in duration but also in the degree of pressure elevation.

Fig. 1.—Ma huang, Ephedra vulgaris var. helvetica.

The rise in blood pressure produced by ephedrine is due to simultaneous vasoconstriction and cardiac stimulation, produced by stimulation of the corresponding sympathetic fibers. Vasoconstriction by ephedrine was

10. Amatsu, H., and Kubota, S.: Ueber die pharmakologischen Wirkung des Ephedrins und Mydriatins, Kyoto Igaku Zassi **10**: 301, 1913 (original in Japanese); **14**: 77, 1917 (original in Japanese), 5 (abstract in German).
11. Chen, K. K., and Schmidt, C. F.: The Action of Ephedrine, the Active Principle of the Chinese Drug Ma Huang, J. Pharmacol. & Exper. Therap. **24**: 339 (Dec.) 1924.
12. Chen, K. K., and Meek, W. J.: Further Studies of the Effect of Ephedrine on the Circulation, J. Pharmacol. & Exper. Therap. **28**: 31, 1926.

observed by Amatsu and Kubota [10] in perfusing the legs of frogs and isolated organs of dogs. These results were confirmed on isolated mammalian organs by us and by Chen and Meek. In plethysmographic studies it was found [13] that as blood pressure rises pure vasoconstriction is evident only in the splenic vessels, constriction followed by dilatation in the kidney, and usually pure dilatation in the intestinal and leg vessels. Evidently cardiac stimulation plays a larger share than vasoconstriction in the pressor effect of ephedrine in anesthetized animals.

The action of ephedrine on the mammalian heart in situ is essentially similar to that of stimulation of the accelerator nerve—an increase in rate and amplitude of contractions.[11] If the vagi are intact, the heart may be slowed reflexly as pressure rises,[12] though amplitude of contraction is increased. After section of the vagi, or after atropine, ephedrine always accelerates the heart rate. It was found [11] that ephedrine stimulates the stellate ganglions as well as the sympathetic endings or myoneural junctions in the heart, an action that is apparently not shared by the closely related amines epinephrine and tyramine, which stimulate only the endings or myoneural junctions.[14]

Another important feature in the action of ephedrine on the heart is the depression. In amphibian hearts, whose sympathetic innervation is relatively unimportant, depression may be the only effect of ephedrine. Thus, Amatsu and Kubota [10] reported that ephedrine causes depression of rate and amplitude of contractions of the frog's heart, with final diastolic arrest. Similar results were obtained by Chen and Meek [12] with hearts of frogs and turtles. With the isolated mammalian heart it was found [13] that while dilute solutions of ephedrine cause stimulation, stronger concentrations produce only depression or arrest. In the intact normal animals this depressant action on the heart is not evident with small doses of ephedrine (from 1 to 10 mg. per kilogram), by which blood pressure is uniformly raised and cardiac contractions increased. Accelerator stimulation appears to overcome entirely the cardiac depressant action of ephedrine. Toxic doses (from 40 to 65 mg. per kilogram) in the anesthetized dog may lead to rapid failure of the heart, with a result of sudden fall in blood pressure. Electrocardiographic studies in dogs and rabbits [12] show that small doses given intravenously cause nothing more than some alteration of the T-wave. Massive doses (from 40 to 75 mg. per kilogram) appear to depress the automatic and conductive system in a descending order; that is, from the sino-auricular node to the termination of the Purkinje system. This leads to bradycardia, even after atropine, prolongation of the P-R interval, partial auriculoventricular block, nodal rhythm, ventricular escape or extrasystoles, bundle-branch block, and finally ventricular fibrillation.

The effect of ephedrine on the circulatory depression produced by histamine, peptone, anaphylaxis, trauma and hemorrhage was investigated in dogs by Chen.[15] In his experiments, ephedrine raises blood pressure in the early stage of shock and hemorrhage, but it fails to do so when the heart beat becomes impaired, or respiration ceases, or the degree of shock is too extensive, or when hemorrhage exceeds 25 per cent of the total blood volume. In some experiments (unpublished) it was found that even a small dose of ephedrine (1 mg. per kilogram) might cause cardiac failure when injected after a prolonged period (thirty minutes) of low blood pressure following histamine. Apparently a heart depressed by continued low blood pressure, with consequent inadequate coronary flow, is more sensitive to the depressant action of ephedrine, and less responsive to its stimulant effect, than the normal heart.

Action on Smooth Muscle.—Ephedrine produces mydriasis when applied locally. This was first shown in 1887 by Miura,[16] and by Takahashi and Miura [17] in 1888. These observers found that the effect is due to the stimulation of the sympathetic system and not to the depression of the oculomotor fibers. We [11] reached similar conclusions, finding that in ephedrine mydriasis the light reflex is retained and physostigmine causes prompt miosis, while after atropine ephedrine causes further dilatation of the pupil. We also noted that after the long ciliary nerves have degenerated, following extirpation of the superior cervical sympathetic ganglion, ephedrine causes definite dilatation of the denervated pupil. The action of ephedrine on the pupil is therefore analogous to that of epinephrine,[18] and it is a question whether it stimulates the sympathetic endings or the myoneural junctions. Ephedrine does not irritate or injure the ocular tissues, has little apparent effect on the conjunctival blood vessels, and has no local anesthetic effect.[11]

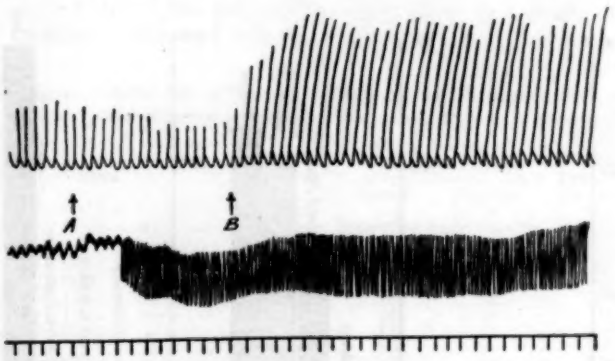

Fig. 2.—Effect of ephedrine on bronchial muscles: Dog, decerebrated and pithed, under artificial respiration. Records from above down are: intrapleural pressure, blood pressure, and time in five seconds. They are to be read from left to right. At *A*, physostigmine sulphate, 5 mg., intravenously; decrease of intrapleural pressure (bronchoconstriction). At *B*, ephedrine hydrochloride, 5 mg., intravenously; increase of intrapleural pressure (bronchodilatation).

Bronchial muscle is relaxed by ephedrine, as by epinephrine. This was shown by Amatsu and Kubota,[10] who found that ephedrine increases the respiratory volume of rabbits, after pilocarpine, peptone or muscarine has produced bronchial spasm. We [11] made a similar observation on a dog rendered asthmatic by physostigmine (fig. 2), and found ephedrine to be less effective than epinephrine.

Movements of the isolated intestines of the cat or rabbit are inhibited and the muscle is relaxed by ephedrine. This was first described by Amatsu and Kubota [10] and confirmed by To [19] and by us.[11] To

13. Chen and Schmidt (footnote 11). Chen and Meek (footnote 12).
14. Chen, K. K., and Meek, W. J.: A Comparative Study of Ephedrine, Tyramine and Epinephrine with Especial Reference to the Circulation, J. Pharmacol. & Exper. Therap. **28**: 59, 1926.
15. Chen, K. K.: The Effect of Ephedrine in Experimental Shock and Hemorrhage, J. Pharmacol. & Exper. Therap. **26**: 83 (Sept.) 1925.
16. Miura, K.: Vorläufige Mittheilung über Ephedrin, ein neues Mydriaticum, Berl. Klin. Wchnschr. **24**: 707, 1887.
17. Takahashi, D., and Miura, K.: Untersuchung über die pupillenerweiternde Wirkung des Ephedrins, Mitt. med. Fak. k. Univ. Tokyo **1**: 255, 1888 (original in German).
18. Meltzer, S. J., and Auer, C. M.: The Effect of Subcutaneous Injections and Instillations of Adrenalin on the Pupils of Rabbits, Am. J. Physiol. **11**: 28, 1904.
19. To, S.: Einige Studien über die pharmakologischen Wirkungen des Ephedrins auf die glattmuskligen Organe, nebst über die kombinierte Wirkung des Ephedrins mit Atropin und Papaverin auf Froschoesophagus, Kyoto Igaku Zassi **18**: 411, 1921 (original in Japanese), 42 (abstract in German).

found that the isolated uterus of the cat or the rabbit is relaxed by small doses and is stimulated by greater concentrations, and that the inhibitory action on the intestine is 1,000 times less sensitive than that of epinephrine. Intestines in situ are also relaxed when ephedrine is injected intravenously, while the uterus is stimulated in the anesthetized dog.[11]

Action on Secretions.—Submaxillary secretion is sometimes increased when ephedrine is injected intravenously in anesthetized dogs.[20] The effect is not prevented by atropine and is therefore comparable to that of stimulation of the sympathetic innervation. Gastric secretion is always increased, though slightly, and other digestive secretions are not affected. Lymph flow from the thoracic duct is increased as blood pressure rises, and urine output is usually increased in dogs after the vasoconstrictor effect has disappeared. An increase in sweat secretion has not been demonstrated experimentally. In brief, the action of ephedrine on secretions is unimportant.

Toxicity.—The fatal dose of ephedrine hydrochloride, by subcutaneous injection, was found by Miura [16] to be from 0.3 to 0.46 Gm. per kilogram in rabbits, and

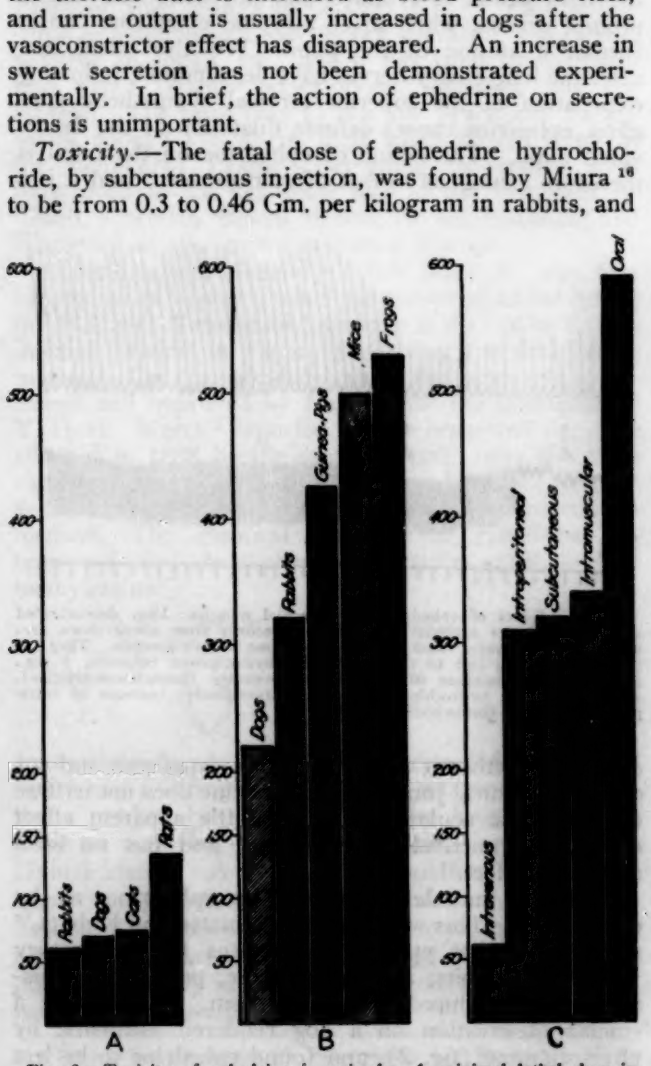

Fig. 3.—Toxicity of ephedrine in animals: *A*, minimal lethal dose in milligrams per kilogram in different species of animals by intravenous injection; *B*, minimal lethal dose in milligrams per kilogram in different species of animals by subcutaneous injection; *C*, minimal lethal dose in milligrams per kilogram in rabbits by different methods of administration. Solid columns, ephedrine sulphate; shaded columns, ephedrine hydrochloride.

0.22 Gm. per kilogram in dogs. In more extended experiments, Chen [21] found that the minimum lethal dose of ephedrine sulphate, by intravenous injection, is, in milligrams per kilogram, for white rats, from 135 to 140; for rabbits, from 66 to 70; for cats, 75, and for dogs, from 70 to 75. In rabbits by intraperitoneal injection, the lethal dose is from 310 to 400; by intramuscular injection, 340; by subcutaneous administration, from 320 to 400, and by mouth, 590. Fujii [22] found a lethal dose of 500 mg. per kilogram in mice by subcutaneous injection. These figures are plotted in figure 3.

Death usually follows a period of clonic convulsions and is due primarily to acute cardiac failure.[21] When large but sublethal doses are given repeatedly there are no symptoms, no interference with the normal gain in weight, no tolerance, and no pathologic changes in the viscera.[23] It is clear that ephedrine is not very toxic, and the margin of safety is comfortably wide.

Mode of Action.—Most of the physiologic effects of ephedrine are referable to stimulation of the sympathetic nervous system. The fact that ephedrine produces mydriasis after the complete degeneration of the long ciliary nerves throws doubt on its stimulating strictly the sympathetic endings. It may act on the structures more peripheral to the endings (myoneural junctions). In the heart the action appears to involve sympathetic ganglions as well as the endings, or myoneural junctions, but an action on other ganglions cannot be demonstrated.[11]

Ephedrine appears also to stimulate the central nervous system. Rabbits narcotized by chloral can be easily awakened by therapeutic doses of ephedrine, as shown by Airila [24] and by Morita.[25] Preliminary experiments dealing with the action of ephedrine as a respiratory stimulant in acute morphine poisoning in animals [26] indicate that it is superior to caffeine, atrophine, strychnine, camphor or carbon dioxide inhalation. In man, moderate doses sometimes cause tremor, nausea and insomnia, which in all probability is due to the stimulation of the central nervous system.

The fact that ephedrine elicits prolonged epinephrine effects in animals suggests that it may act through stimulation of the suprarenal glands. A series of five experiments, two on cats and three on dogs whose suprarenals were tied off or removed, showed conclusively that the effects of ephedrine are not decreased by the absence of suprarenal secretion.

Comparison with Epinephrine.—Ephedrine may be looked on as a weaker epinephrine; that is, its effects are not as intense as those of epinephrine. It has a definite depressant action on the heart in large doses, or when the heart is under unfavorable conditions. From the therapeutic point of view the advantages of ephedrine over epinephrine are its much more prolonged action, its effective absorption from the intestinal tract, its easy isolation, and its stability in solutions even after boiling, or after exposure to light and air for as long as nine months. Its toxicity being low, and it being evident that no tolerance or habit is developed by its use, the drug appears to deserve clinical trials as a possible substitute for or adjuvant to epinephrine. As far as they have gone, such trials are encouraging.

CLINICAL RESULTS

As a Mydriatic.—The action of ephedrine on the human eye was studied in 1887 by Miura [16] and in 1889 by De Vriese.[27] They found that a 10 per cent solution

20. Chen and Schmidt (footnote 11). Chen, K. K.: The Effect of Ephedrine on Digestive Secretions, J. Pharmacol. & Exper. Therap. **27**: 87, 1926.
21. Chen, K. K.: The Acute Toxicity of Ephedrine, J. Pharmacol. & Exper. Therap. **27**: 61, 1926.
22. Fujii, M.: Ueber die pharmakologischen Wirkungen des Pseudoephedrins und deren Vergleich mit der des Ephedrins, J. Oriental Med. **3**: 1, 1925. (Original in German.)
23. Chen, K. K.: The Effect of Repeated Administration of Ephedrine, J. Pharmacol. & Exper. Therap. **27**: 77, 1926.
24. Airila, Y.: Ueber die Einwirkung verschiedener Erregungsmittel der Grosshirnrinde auf den Chloralhydratschlaf, Arch. internat. de pharm. et de thérap. **23**: 453, 1913.
25. Morita, S.: Die Einwirkung zentraler Erregungsmittel auf den Chloralschlaf, Arch. f. exper. Path. u. Pharmakol. **78**: 218, 1915.
26. Schmidt, C. F.: Unpublished results.
27. De Vriese, A.: L'éphédrine et la pseudoéphédrine: nouveaux mydriatiques, Ann. d'ocul. **101**: 182, 1889.

of ephedrine hydrochloride causes mydriasis in from forty to sixty minutes, lasting from five to twenty hours. There is no cycloplegia, no secondary inflammation, no change in intra-ocular tension, and no untoward effects after prolonged use. We [11] obtained similar results with a 4 per cent solution. As a result of the pioneer work of Miura, ephedrine has been advocated as a mydriatic for examination of the fundus, and is employed for this purpose often in combination with homatropine.[28] Merck named this mixture "mydrin." [29] The pupil returns to normal size within six hours with such a mixture. Up to the time of the work of Chen and Schmidt, no other therapeutic application was made.

As an Astringent to Mucous Membranes.—Our statement [11] that ephedrine effects are qualitatively the same as those of epinephrine suggested to Dr. Alice H. Cook of the department of otolaryngology of the Peking Union Medical College the use of ephedrine locally in the nose and throat. She found [30] that a 10 per cent solution of ephedrine sulphate causes almost immediate shrinkage of an engorged nasal mucous membrane, and that the action is more rapid and complete than that of a 4 per cent solution of cocaine hydrochloride. This subject was investigated more thoroughly by Fetterolf and Sponsler,[30] who used a 5 per cent solution of ephedrine sulphate and found it so effective that they described ephedrine as a drug which, for use in the nose, "has all the advantages of epinephrine with perhaps none of its disadvantages." Shrinkage of the turbinate begins almost immediately, is complete within five minutes, and persists for nearly three hours. There is no sign of local irritation or subsequent dilatation, and by repeated administration it is possible to control the symptoms of engorgement with no untoward effects. Dunlap [31] of Peking Union Medical College has used a 5 per cent solution with good results in acute and subacute inflammations of the nose and in vasomotor rhinitis. Middleton and Chen [32] used a 1 per cent solution in the nose, with good results. Fahr [31] succeeded in relieving headache due to sinusitis with the same strength of solution.

When ephedrine hydrochloride is used, some patients complain of a "stinging" sensation, but this is not noticed with the sulphate. Growth of molds in the solution due to warm weather can be prevented by the addition of a few crystals of menthol, camphor or thymol.

The favorable results obtained with ephedrine as a local application to the nose suggest its use on other mucous membranes, particularly those of the urinary tract. So far no reports of its use in this connection have been published.

As a Circulatory Stimulant.—(*a*) In the Absence of Circulatory Depression: We [11] showed that blood pressure of normal men can be raised by ephedrine given by mouth or by subcutaneous or intramuscular injection. Its action on the circulation was studied by Miller [33] in a series of eighty-four patients, and by Middleton and Chen. Miller found in about 83 per cent of his cases a rise in systolic blood pressure, varying from a few millimeters of mercury to 60 or 70, while diastolic pressure is not constantly affected, though it tends to rise. The extent of the rise is as great when the drug is given by mouth as when it is injected subcutaneously, but it develops more slowly after oral administration. In 8 per cent of Miller's cases ephedrine did not change blood pressure, while in 7 per cent it was followed by a fall in pressure. When a rise in pressure occurs it usually lasts several hours, and in some cases it persists for more than twenty hours after a single dose. During the rise in pressure the pulse is usually slowed, though occasionally it is accelerated. The heart sounds are stronger, and systolic murmurs often appear at the apex or base. These murmurs were attributed to distention of the heart, and this was confirmed by fluoroscopic studies (Miller). Tonal arrhythmia is sometimes noted in taking blood pressure. Occasionally, auricular or ventricular extrasystoles are demonstrated by the electrocardiogram.

The average dose of ephedrine sulphate required to raise the blood pressure lies between 60 and 150 mg. (from 1 to 2½ grains) for normal adults, given by mouth in capsule, or by hypodermic injection. As much as 400 mg. (6⅔ grains) has been given in a single dose without untoward effects.

Observations on Effect of Ephedrine in Addison's Disease

Time	Blood Pressure, Mm. of Mercury		Pulse Rate per Minute
	Systolic	Diastolic	
10:20 a. m.	83	54	88
10:25 a. m.	Ephedrine hydrochloride, 200 mg. by mouth		
10:40 a. m.	85	57	86
10:55 a. m.	96	66	78
11:10 a. m.	100	68	69
11:40 a. m.	128	82	76
12:00 m.	122	82	72
1:00 p. m.	110	66	76
2:00 p. m.	107	65	78
3:00 p. m.	100	60	80
4:00 p. m.	100	60	80
7:00 p. m.	100	60	84
8:30 a. m.	90	56	86

(*b*) In Hypotension: The effect of ephedrine in chronic hypotension (systolic level below 100 millimeters of mercury) was studied by Miller in twenty-three patients. It raised the blood pressure without a single exception. Middleton and Chen obtained similar results in eight patients. It was hoped that, by repeated administration of ephedrine, blood pressure might be maintained at a normal level continuously in these cases, but this has been proved impracticable; for when a dose of ephedrine is repeated before the effects of a preceding one have worn away, the pressor effect becomes less and less marked, and it is only after an interval of about twenty-four hours or more that a second dose is as effective as the first. If the dose is increased the pressor response may or may not be greater, but these patients usually show nausea, tremor, etc., which subside only when the dose is reduced. The benefit to be expected from ephedrine in chronic hypotension is therefore only that which follows rather brief periods of elevation of blood pressure to the normal level (Miller).

Chronic hypotension is most marked in Addison's disease, and it was hoped that ephedrine would be of value in these patients. We tried ephedrine in a single case with much benefit. The results from one of the observations are shown in the accompanying table. A man, aged 30, Chinese, a huckster, was diagnosed as having Addison's disease, syphilitic periostitis and pul-

28. Groenouw: Ephedrin-Homatropinlösung, ein Mydriaticum von rasch vorübergehender Wirkung, Deutsch. med. Wchnschr. **21**: 161, 1895. Suker, G. F.: Ephedrin-Homatropin, the New Mydriatic, New York M. J. **61**: 714, 1895. Stephensen, S.: Some Remarks on a New Mydriatic (Ephedrine Hydrochloride), Lancet **2**: 24, 1898.
29. Merck, E.: Mydrin, Berichte, 1894, p. 84.
30. Fetterolf, G., and Sponsler, M. B.: Ephedrine Sulphate, the Alkaloid of Ma Huang, Arch. Otolaryn. **2**: 132, 1925.
31. Personal communication to the authors.
32. Middleton, W. S., and Chen, K. K.: A Clinical Study of Ephedrine, to be published.
33. Miller, T. G.: A Consideration of the Clinical Value of Ephedrine, Am. J. M. Sc. **170**: 157 (Aug.) 1925.

monary tuberculosis. As a result, we felt that ephedrine might prove to be a specific in Addison's disease. Subsequent investigation shows that this is not so, for the striking improvement shown by their patient has not been manifested in any other similar cases. Thus, Miller found that while ephedrine caused temporary improvement in two cases, the effect could not be sustained and both patients died. Rowntree [31] treated three cases with ephedrine, with improvement in two, while the third patient complained of headache after ephedrine and the drug had to be withheld. The effect of ephedrine in Addison's disease is probably analogous to its effect in simple hypotension, and only brief periods of elevation of blood pressure can be expected from it. Because of the underlying pathologic condition, Addison's disease is uniformly fatal, so that it will be absurd to hope for a cure from the use of ephedrine.

In acute circulatory crises, ephedrine would be expected to be of more value. We [11] investigated its effect in surgical shock in a single patient, with encouraging results. Miller reported real improvement in two cases in profound shock. Since then it has been tried in a large number of cases of shock and hemorrhage, usually without beneficial result, even though the drug is given intravenously. The experiments made by Chen [15] on the effect of ephedrine in various forms of shock in dogs indicate that the drug is useful only under suitable conditions. It is probable that the integrity of the heart function is the chief factor, for unless the heart is in good condition ephedrine may have no effect or produce simple depression. When blood pressure has been low for some time the heart function must be impaired through deficient coronary flow, and ephedrine may likely injure the heart under the circumstances that call most urgently for a circulatory stimulant. Another factor is the relative weakness of ephedrine as a stimulant to the vasoconstrictor and cardiac accelerator system, so that it may be unable to produce any effect in cases of shock and hemorrhage, in which vasoconstriction and cardiac acceleration are already present.

In Cardiac Disorders.—Miller [23] reported the occurrence of transitory pulsus alternans in a patient with myocardial degeneration. Another patient with complete heart block showed an increase in both auricular and ventricular rates after ephedrine. Its action in auricular fibrillation was studied by Middleton and Chen [32] in a single patient who had developed hiccup in addition to cyanosis, edema and dyspnea. Ephedrine caused a rise in arterial pressure and a fall in venous pressure, and stopped the hiccup, but had no effect on the fibrillation. It is evident that a potential cardiac depressant and an active accelerator stimulant like ephedrine must be used with caution in the presence of cardiac disease. The possibility of benefit by ephedrine in cardiac decompensation, evident in the patient of Middleton and Chen, deserves further investigation, as well as its action in combination with digitalis.

In Asthma.—Miller [23] found that ephedrine given by mouth or injection during attacks improved six out of seven cases of asthma. In four patients ephedrine by mouth brought complete relief; in two others it reduced markedly the number of epinephrine injections that were required, while in only one patient did it fail entirely. In a much larger series of patients he has found only exceptional instances of complete failure of ephedrine to relieve the paroxysms, though a large proportion of the patients continue to require occasional injections of epinephrine. The success of epinephrine when ephedrine alone is unable to bring complete bronchial relaxation is to be expected from our experiments,[11] as we found that ephedrine is a weaker bronchodilator than epinephrine in animals. A curious feature in the action of ephedrine in asthmatic patients is that it usually dilates the bronchioles without raising systemic blood pressure, while a similar dose regularly raises blood pressure in nonasthmatic patients. The difference must be due to an effect on the pulmonary circulation. Middleton and Chen [32] studied ten cases of asthma not associated with cardiac disease. Of these, six were definitely improved, two doubtful, and the other two not affected. Wearn [31] used ephedrine in six cases of asthma due to sensitization, in several associated with chronic bronchitis, and in one with tuberculosis. Relief was brought about when given by mouth, in from 60 to 100 mg. doses.

Other Effects.—Basal metabolism was found to be increased regularly after ephedrine by Miller [33] and by Rowntree.[31] Its effects on blood sugar were inconstant in Miller's cases, though Nagel [34] reported a definite rise after intravenous injection in rabbits. Urine secretion was not constantly altered in Miller's series, though there was a tendency to diuresis after the drug. Miller tried ephedrine in two cases of urticaria, both of which were relieved by it. As an ingredient of local anesthetic solutions ephedrine seems to be too weak a vasoconstrictor, for it may be absorbed from the subcutaneous tissues and produce systemic effects. In one case a marked rise in blood pressure followed its use in a procaine solution, and local anesthesia was imperfect. Obviously, such a procedure is unsafe.

Untoward Effects.—No serious results have been reported from the use of ephedrine in man, even in single doses of 400 mg., or in portions of 150 mg. repeated every three hours day and night. No signs of habit formation or development of tolerance have been encountered, even when the drug has been given over a period of months. Some patients, especially women, after receiving 200 mg. of ephedrine by mouth, complain of some of the following symptoms: perspiration, chill, palpitation, weakness, dizziness, nervousness, tremor, nausea and epigastric discomfort. Sweating and tremor can be objectively confirmed. While it is interesting to note that the drug actually possesses diaphoretic properties, for which it has been highly esteemed in China, the action is apparent only in persons who show obvious signs of an effect on the central nervous system. In some patients insomnia and some of the foregoing symptoms develop after the drug has been given in smaller doses for some time (several days or weeks) and they subside when the drug is withdrawn. The most probable explanation of these effects is a stimulation of the central nervous system.

In several cases transient gross albuminuria develops after ephedrine, and in most cases it is possible by delicate tests to show the presence of some albumin in the urine after the drug. This phenomenon has been studied recently by Starr,[35] who finds similar results from other vasoconstrictor agencies (epinephrine, asphyxia). He attributes the albuminuria wholly to renal vasoconstriction, and as none of these patients show any other signs of deranged kidney function, it is evident that ephedrine does not injure the kidney directly.

34. Nagel, A.: Ein Beitrag zur pharmakologischen Analyse der Ephedrinwirkung, Arch. exper. Path. u. Pharmakol. **110**: 129, 1925.

35. Starr, I., Jr.: The Production of Albuminuria by Renal Vasoconstriction in Animals and in Man, J. Exper. Med. **43**: 31 (Jan.) 1926.

The possibility of serious depression of a weakened heart by ephedrine has been evident only in the case of myocarditis, reported by Miller,[33] who showed an alternating pulse after the drug was given. The effect was transitory and no serious after-effects were seen. Experimental evidence indicates that ephedrine, injected intravenously in cases of profound shock of thirty minutes or more duration, may cause cardiac failure, but so far the worst effect from ephedrine in human subjects in shock has been a steady, uninterrupted progression of the condition.

It is evident, therefore, that each of the three chief features in the action of ephedrine, stimulation of the sympathetic innervation, stimulation of the central nervous system, and the depression of the heart, may produce untoward effects in human beings. Stimulation of the sympathetic fibers in the kidney may produce albuminuria, stimulation of the central nervous system may cause insomnia, nausea, tremor, etc., and depression of the heart may cause arrhythmias, or possibly even cardiac failure, though so far this has not been reported.

COMMENT

The use of ephedrine as a substitute for epinephrine in therapeutics is based on the fact that the substances are closely related chemically and physiologically. Ephedrine, while less active physiologically, has the advantage over epinephrine of eliciting more prolonged effects, of being effectively absorbed when taken by mouth, and of being a much more stable substance. Its low toxicity and its occurrence in a common Chinese plant are circumstances favorable to its widespread use, should it be found of value clinically.

The results of clinical trials of ephedrine so far indicate that it will be found to be most useful as a local application to the nose in cases of chronic congestive conditions such as hypertrophic rhinitis and hay-fever. This alone would make it a useful drug.

Of almost equal promise are its effects in asthma. A drug which will control the symptoms entirely, or at least reduce the number of epinephrine injections that are required, and which can be given effectively by mouth, appears to be a real addition to therapeutics. The precise limitations of ephedrine in asthma are not yet evident, but it seems certain that it will be found useful in many, if not in most, cases.

As a circulatory stimulant, ephedrine has been rather a disappointment. In chronic hypotension it seems to be of little or no value, and in acute circulatory crises it usually fails to work. It is possible that ephedrine will find a place in the treatment of acute crises when the reasons for its usual lack of effect are considered. These are its inability to cause appreciable stimulation of the vasomotor system because it is a weak stimulant and the system is probably already stimulated, and its tendency to depress the heart. If ephedrine is given with epinephrine, ephedrine may prolong the effect of the stronger stimulant.[14] The tendency to cardiac depression can be minimized by improving the coronary circulation by means of epinephrine and saline infusion or transfusion of blood before ephedrine is given. It should be possible, by means of a combination of ephedrine with preliminary infusion of fluid and epinephrine, to secure some beneficial effects from ephedrine in many cases of shock. Ephedrine should not be injected intravenously in cases of profound shock if epinephrine fails to elicit a response, for it can do no good and may do harm. Ephedrine is certainly not to be regarded as a specific for shock. Its actual usefulness remains to be determined clinically.

Ephedrine may prove valuable in the treatment of anaphylaxis and urticaria, and as a respiratory stimulant in poisoning by narcotic drugs. In the latter connection it seems to be more regularly effective and less dangerous than any other single drug in experimental morphine poisoning. Its use in ophthalmoscopic examination should not be lost sight of.

All of the results reported above have been obtained with ephedrine sulphate or hydrochloride, salts of the alkaloid of the Chinese plant ma huang. There are other alkaloids, isomeric with ephedrine (pseudoephedrine, methylmydriatine) which may differ physiologically. Until a comparative study of these compounds is carefully made, the statements mentioned above can be applied only to ephedrine, obtained from the Chinese plant by the methods already described.[36]

ABSTRACT OF DISCUSSION

DR. GEORGE E. BROWN, Rochester, Minn.: Through the courtesy of Dr. Bernard Read of Peking, we were furnished with an amount of this drug for clinical trial, and Dr. Rowntree and I were particularly interested in determining its efficacy in Addison's disease. We observed fourteen cases of Addison's disease last year which were treated with ephedrine. There is no question as to the efficacy of this drug in increasing the blood pressure. We were able to demonstrate increases of from 25 to 30 mm. of mercury. This increase in blood pressure was not accompanied with the desired systemic improvement that we had anticipated; that is, one could obtain a rise in blood pressure, but the patient did not accordingly feel improved in his clinical condition. We tried this drug in three cases of Addison's disease in the so-called shock state but were unable to demonstrate any particular benefit in this condition. In cases of essential hypotension and chronic exhaustion, we could also demonstrate a very definite increase in blood pressure from doses of 100 to 150 mg. a day. One patient had 150 mg. a day for thirty days and a very definitely maintained increase in his systolic pressure, but without a significant change in the diastolic pressure. There was usually some subjective improvement. Toxic effects were lacking or very mild. There is no question as to the pressor effects of this drug. Raising the blood pressure would not, of course, affect the underlying disease. Dr. Gaarde of the Mayo Clinic has been using ephedrine in ragweed hay-fever and he reports that 50 per cent of the patients had marked relief for from three to eight hours. To me, it is a most interesting idea that a drug known in Chinese medicine for 5,000 years is now shown to have pharmacologic action similar to epinephrine and promises to play a rôle in our future treatment of disease.

DR. A. P. MUNSCH, St. Louis: I should like to ask Dr. Chen if it has been observed whether the blood sugar is increased when this drug is used. In cases of diabetes mellitus with low blood pressure, would this drug be available and effective or would it be a danger to the patient?

DR. RALPH H. MAJOR, Kansas City, Mo.: We have worked with this drug in the laboratory and can confirm the rise in blood pressure which Dr. Chen described. I have seen a marked improvement in asthmatic patients and have also been able to raise the blood pressure in patients suffering from hypotension. It is a very interesting feature that the action of ephedrine is similar to that of epinephrine, but it can be administered by mouth. I am sure that patients will appreciate this feature. I should like to know whether Dr. Chen has found it necessary to give patients with hypotension constantly increasing doses in order to raise their blood pressure; also whether he has studied microscopically the arterial or capillary changes produced by this drug.

DR. JOSEPH L. MILLER, Chicago: Does this drug relieve bronchial asthma and hay-fever when taken by mouth or must it be given subcutaneously? We are much in need of a drug which will relieve asthma that can be taken orally.

36. Nagai (footnote 2). Chen (footnote 4).

DR. CLYDE BROOKS, Tuscaloosa, Ala.: I should like to ask Dr. Chen whether this drug acts quantitatively and qualitatively like epinephrine on all the tissues and organs which he has tested; in other words, whether it has what is termed a sympathomimetic action. Another point is, whereas in Dr. Chen's tracings there is a rise in blood pressure which lasts for a long time, the volume curve at first shows decrease followed by increase in volume. Why does the volume curve not follow the blood pressure curve? Where does the blood go during the decrease, and where does it come from during the increase in volume?

DR. J. I. JOHNSTON, Pittsburgh: Answering Dr. Miller's question: the drug certainly seems to take the place of epinephrine in relieving bronchial asthma. It has been particularly useful in cases in which pulmonary emphysema was present and the patients have been advanced in years. Our experience seems to bear out all Dr. Chen has said. We have, however, seen one drawback and this has been explained in the paper. Our patients complained of sleeplessness. The drug relieved the syndrome of asthma, it produced a definite rise in blood pressure, and the only objection seen was the inability to sleep well.

DR. JULIAN E. BENJAMIN, Cincinnati: Will Dr. Chen tell whether he has observed the effect of ephedrine in collapse in pneumonia? Would he also explain whether the action of the drug in stimulating the human heart is similar to the experiment shown here, namely, that in the initial phase there is stimulation followed by depression. Is this true when the drug is given by mouth? Is there diminished kidney excretion when the drug is given clinically by mouth as when it is given intravenously in the experiment?

DR. K. K. CHEN, Madison, Wis.: An English drug house recently sold to this country a considerable quantity of so-called ephedrine hydrochloride. We found that the drug was not effective clinically in the control of asthma, and that its physical constants were entirely different from those of our own product. I hope that any who use ephedrine will be certain of its purity in order to avoid any unnecessary discrepancy of results which may soon appear in literature. In answer to Dr. Munsch's question, Dr. T. G. Miller's clinical work does not indicate any consistent change of blood sugar after the administration of ephedrine. In our experiments with animals (rabbits and dogs), we have found hyperglycemia which is not so high as occurs after ordinary doses of epinephrine. I cannot tell whether it will be dangerous in diabetes or not. The question can be answered only by trial. At the Wisconsin General Hospital we gave ephedrine to a diabetic patient because of hypotension. No untoward symptoms were experienced by that patient although there was a slight disturbance of blood sugar. With regard to Dr. Major's questions, the most effective dose is the first one; for repeated administration may not raise as much blood pressure as the first. I do not believe there is any good reason to increase the dose. It is usually often enough if the drug is given two or three times a day. Concerning the action of ephedrine on capillaries, I have done some work on the frog's kidney and tongue. The results so far are not definite and I am not in position to make any statement. Dr. Miller's question has been answered by Dr. Johnston. Ephedrine can be taken by mouth instead of by hypodermic injection. The effect is just the same. In hay-fever we have not enough data to justify a conclusion. In our experience, when there is no asthmatic attack in association with it, the local application of ephedrine to the nasal mucosa markedly relieves the congestion. Anyway, I do not think that ephedrine can desensitize the patient, because there is no ground for it. Answering Dr. Brooks' question, roughly speaking, ephedrine acts like epinephrine. In a limited period of time, I cannot enumerate the exceptions, such as the action of ephedrine on the stellate ganglions, which is not shared by epinephrine. When injected intravenously, the intestinal and leg vessels are dilated, while the splenic and renal vessels are constricted. The distribution of blood in the body is therefore obvious. Dr. Johnston's remarks need no answer, with the possible exception of the sleeplessness. I do not know how many cases he has treated. In our experience, as in Dr. Miller's, sleeplessness is not a constant feature. The more common complaints are perspiration and tremor. At the Wisconsin General Hospital we have treated ten cases of asthma to date. None of them showed insomnia. One patient with simple chronic hypotension was troubled with sleeplessness, but we were able to control it by the administration of barbital. Dr. Benjamin mentioned the possibility of giving ephedrine in the collapse of pneumonia. We have not enough data on that subject. We had, however, a very interesting case at Philadelphia. A resident came down with pneumonia. He was on the verge of death and became nearly breathless. Ephedrine was administered intramuscularly twice. Within a few hours his condition was much improved, and he recovered in a few days. We do not know whether it was a spontaneous recovery or whether ephedrine actually helped him to overcome the crisis. It certainly gives us a favorable hint. Dr. Benjamin also asked whether there is any renal vasoconstriction after the use of ephedrine in human beings. I think there is. Dr. Starr has published his results recently. He found a transient albuminuria after ephedrine, which he attributes to renal vasoconstriction.

DIAGNOSTIC CRITERIA OF MALIGNANT DISEASE IN THE UPPER RIGHT QUADRANT *

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The abdomen contains no less than thirty-seven important organs and tissues, if we include the adjacent retroperitoneum, and every one of these is subject to malignant disease. The variety and complexity of these organs and resulting clinical phenomena in malignant disease are so intriguing that careful clinicians must take keen delight in every research that advances conclusive diagnosis. The upper right quadrant, the limitation of my paper, embraces no less than twelve of these organs, and is the most interesting and difficult of the abdominal divisions.

CLINICAL PHENOMENA

The number, variety and functional activities of these organs in malignant diseases will produce such alterations in the anatomy, usually progressive destruction, as may often be recognized; if physiologic alterations in secretion and excretion and absorption and motor function could be as easily recognized at early stages, much improvement in diagnosis and even in treatment would result. Subjective phenomena are still of the greatest importance, in spite of the fact that hurrying clinicians have depended entirely too much on laboratory findings. Objective phenomena are of less importance, because of later appearance, when destruction or obstruction has advanced usually to irremedial conditions. With the exception of the accuracy of roentgenologic examination in gastric malignant disease, and, to a far less degree, in colon and renal cancers, no diagnostic criterion is available to make a positive diagnosis with the single exception of the cancerous tissue recovered by clinical means and confirmed by microscopic examination.

THE STOMACH

When one remembers that nearly all carcinomas of the gastro-intestinal tract are located in the stomach and colon, the problem is somewhat simplified. When it is further recalled that in both of these viscera the scirrhous, encephaloid and colloid forms occur with somewhat

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differing frequency and differences in symptomatology, the disease is rather less confusing. We are told in textbooks of anatomy that the stomach lies five sixths in the left and one sixth in the right hypochondrium, and, consequently, our problems refer more particularly to the pyloric carcinomas, which more easily and more early produce obstructive phenomena than those situated in the greater curvature or cardia. The recent knowledge of the stomach, however, gained by roentgenologic examinations shows that its location is variable. The intensity of the malignant process, as well as the location, also give important indexes. For example, a scirrhous growth, progressing slowly, does not produce the cachexia of early ulcerative processes in the more rapidly growing fungating type.

Among those symptoms arousing suspicion, as emphasized by Osler and previously commented on by others, is the sudden beginning of dyspeptic symptoms, which persist in a person past 40, who has always had a "cast iron or ostrich" stomach. Too much stress can scarcely be put on this fact, and the most painstaking efforts should be made to ascertain whether such symptoms, so occurring, do not mean a malignant condition. Notwithstanding the infrequency and now, with modern surgical explorations and roentgenologic examinations, the increasing frequency of cancer of the young, even down to early childhood, the fact remains that youth is comparatively rarely affected by cancer of the stomach, and the age incidence of 45 to 70 must still be regarded as of the highest indicative importance. I myself have not had a patient with cancer of the stomach who was under 30 years of age, but modern methods of diagnosis and operation confirm cases in early life. Osler and McCrae presented six cases in children under 10 years of age in 1909, out of a study of 7,000 cases. They range from 6 weeks to 10 years of age. Schlesinger [1] reported cases in persons ranging from 10 to 20 years of age in almost every year, and between the ages of 20 and 30 the number steadily increased. Sullivan [2] in 1924 reported the case of a student, aged 22, and estimated that from 3 to 4 per cent of cancers of the stomach occur in the third decade. He likewise concludes that "there is no demonstrable differences as to the histologic type of juvenile carcinoma or with respect to the seat of the growth in the stomach. There are only three factors by which these juvenile cancers differ from those seen in older patients; namely, absence of cachexia, early onset of high temperatures, and early formation of metastases." One must also consider suddenness of onset and rapid course as being more common in early life.

If one considers the clinical evidence it is apparent we have substantially three types of cases with corresponding variations in symptoms, as follows:

(*a*) Those past 40 years of age with a history of previous robust health and no stomach trouble whatever. They usually begin suddenly or with comparative rapidity to complain of epigastric discomfort, distress after eating, eructations, fulness, soreness, more or less pain, anorexia or diminished desire for food, distaste for certain articles previously enjoyed, weakness, loss of weight, nausea, vomiting, and almost always constipation in those who have previously been regular. With these symptoms, signs of anemia, cachexia, palpable tumor, emaciation and jaundice supervene. The usual gastric reactions to test meals and the early appearance of filling defects make the diagnosis.

(*b*) The gastric and duodenal ulcer type, in which dyspeptic symptoms begin several years before, occur intermittently, with mild to moderate severity, and finally take on increased severity and progress suddenly or gradually. They present a large class having early hyperacidity, to be followed by variations at a later date, not infrequently becoming achlorhydric. It is this class, perhaps, that occasions the recurring differences of opinion as those held by T. Gregory Cole and the Mayo group, in regard to the transition from benign to malignant ulceration. Those of us watching such cases for years must conclude that ulcus carcinomatosus exists clinically or that an actual carcinoma ulcer has existed over a much longer period of time than we have hitherto believed.

Gastric analysis, blood exhibits and signs of cachexia will vary according to duration, intensity and coincident factors.

Roentgenologic findings are often conclusive, although a word of caution must be given in accepting them as final, when so great an authority as Carman [3] states that "like every other diagnostic test the roentgen ray is not infallible. Sometimes it overlooks; sometimes it misinterprets." Brams [4] reports an instructive case of benign plaque-like adenoma of the stomach, with a large filling defect found by the roentgen ray and believed to be an inoperable carcinoma of the stomach. This suspicion was strengthened by the association of anemia, emaciation and achlorhydria and the presence of ferment acid in the gastric contents. In a case that I saw, roentgen-ray examination revealed a large filling defect caused by a dermoid cyst and led to a diagnosis of carcinoma, although the general health hardly justified such a diagnosis. Not infrequently, gastric syphilis presents a roentgenologic picture indistinguishable from carcinoma and resulting in confusing and lamentable error in diagnosis. Cases of gastric carcinoma occurring in a syphilitic patient and presenting evidences of both diseases constitute a particularly difficult problem. In my own experience, antisyphlitic therapy has produced disappointing results in relief of the gastro-intestinal symptoms and led to a more difficult diagnosis of the accompanying malignant disease in a few instances.

(*c*) A small group of cases presenting a close superficial resemblance to pernicious anemia. There is no palpable tumor, and ordinary gastric and roentgen-ray examinations reveal signs of cancer.

Garvey and Stern [5] report an interesting case of posterolateral degeneration of the spinal cord with carcinoma of the stomach, clinically and pathologically resembling pernicious anemia. The blood count was 3,150,000 red cells, 5,100 white cells and 81 per cent hemoglobin, thus giving a hemoglobin index of almost 1.3 per cent and closely approaching the addisonian anemia. The postmortem revealed the pathologic condition of the cord and an adenocarcinoma of the pylorus, with metastases in the peritoneum and mesentery but none in the spinal cord.

The number of these cases is small, and critical study now enables the careful diagnostician to make the distinction. Little has been said regarding the chemical observations in test meals, such as the Wolff-Junghaus reaction or the Ewald, Boas or fractional test meals,

1. Schlesinger: Surg. Gynec. Obst. **39**: 284 (Sept.) 1924. Bibliography.
2. Sullivan: Surg. Gynec. Obst. **39**: 285 (Sept.) 1924.
3. Carman, R. D.: Southern M. J. **15**: 20 (Jan.) 1922.
4. Brams, W. A.: M. Clin. N. Amer. **8**: 533 (Sept.) 1924.
5. Garvey, J. L., and Stern, L. D.: Am. J. M. Sc. **168**: 847 (Dec.) 1924.

and it is difficult to accept the positive conclusions of T. Isod Bennett,[6] who asserts that the old methods of gastric analysis are faulty and avers that the use of the fractional method makes it exceedingly rare for a case of carcinoma of the stomach to occur without a positive diagnosis being established as soon as gastric analysis is performed. Such has not been my experience. All forms of gastric analysis have failed me in establishing a certain diagnosis. While many other diagnostic methods, such as the complement fixation test, the Abderhalden reaction and the Friedenwald sugar curve, are helpful, one must still rely more definitely on the history, physical examination, roentgen ray, and the rare cases in which tumor cells are found in the gastric contents.

The duodenum is so seldom cancerous that it need not be discussed here. I have never seen a case of duodenal cancer except by extension.

No reference has been made to carcinoma of the omentum, but I have seen one case in my own practice presenting a large colloid carcinoma of the omentum, secondary to the stomach, resulting in a large tumor in the epigastrium and having the so-called snow crepitus sign. On palpation, the mass gave a sound and palpable sensation very similar to that elicited by crunching the foot into dry snow.

THE LIVER AND BILE PASSAGES

This discussion is confined to primary carcinoma of the liver, which is still a rare disease, although being steadily reported with increased frequency. The earliest cases reported within my knowledge were two by Kelsh and Keiner,[7] Counseller and McIndoe[8] reported five cases, four of which were hepatoma and one cholangioma. The criteria are not distinctive, but one should consider seriously the following:

1. Pain, in nearly all cases ranging from mild discomfort to the dull or cramping type, the latter usually in the lower part of the abdomen, the former in the epigastrium and right hypocondrium.

2. Digestive disorders, usually anorexia, nausea, vomiting, eructations, gaseous distention and, almost constantly, constipation.

3. Jaundice, slight and usually progressively deepening, a symptom said by Torland[9] to occur in 63 per cent of the cases.

4. Ascites, often occurring early and increasing rapidly with edema of the feet and extremities coming later.

5. Loss of weight and strength, occurring rather rapidly and progressively, and ranging from 10 to 20 or 40 pounds or more. Less constant and important symptoms are fever from 100 to 103 F., usually late and very rarely accompanied by chills. Bronzing of the skin of the face and neck, chest and abdomen is occasional. With metastases to the lungs, kidneys and other organs, the symptoms referable to them may confuse the picture.

Among the signs of importance in suspecting the disease are:

1. Massive or nodular enlargement of the liver.

2. Fluctuation in the abdomen, shifting with the position and quantity of fluid.

3. Fixity of the liver, becoming immobile in respiration and on palpation, mentioned by Counseller and McIndoe and quoted from Brulé.[10] There is rapid progress, death usually occurring within four months. All of the foregoing symptoms and signs may be present in secondary carcinoma, and diagnosis of the primary form must not be made until every focus of primary involvement from the eye to the rectum is carefully investigated as originally suggested by Virchow, and this requires extensive postmortem examination.

GALLBLADDER

Carcinoma of the gallbladder is infrequent as compared with that of other organs, and we must rely for suggestive signs on pain, tumor and jaundice. Even the roentgenologic examination sheds no conclusive light, and surgical exploration is now so safe that delay should not be tolerated in doubtful cases. The symptoms and signs of carcinoma of the bile ducts are difficult, particularly the small ball-and-socket-like growth of the ampulla of Vater, and I know of no differentiating signs.

PANCREAS

Malignant neoplasms of the pancreas are largely carcinomatous. Sarcoma is next in frequency, and, in the light of the case reported by Foot, Carter and Flipse[11] in 1924, neuroblastoma may be considered. The primary symptoms are usually few and prominent and progressive. The secondary symptoms are less suggestive. We must rely on pain. It is commonly epigastric and dull, though I have seen one case in which pain was persistent and intense and was referred to the middle of the back and around the left costal margin. This pain was accompanied immediately by the occurrence of glycosuria, which was known to be absent previously. The pain occurred suddenly, while the patient was on a shopping tour, and never disappeared. Loss of weight began at once, while there were no gastric or intestinal symptoms of consequence. Jaundice did not appear for two months and was never as deep as usual but persisted until death. Exploration disclosed a carcinoma the size of a hen's egg in the body of the pancreas adjacent to the head. The patient succumbed in a short time in acidosis coma. The pain of carcinoma of the pancreas is occasionally paroxysmal and so intense as to resemble gallstone colic. Such a case in a man aged more than 60 with progressive muscular atrophy came under my observation. Three separate attacks of agonizing pain, accompanied by nausea and intense vomiting, gaseous distention and disturbing constipation, were soon followed by pronounced jaundice, which cleared up in about one week. Operation revealed no trouble with the gallbladder but a firm and large head of the pancreas, which proved on postmortem examination to be carcinoma and fibrosis.

Jaundice is ordinarily progressive and may produce bronzing of the skin, and in about 50 per cent of the cases is associated with Lavoisier's sign—a distended gallbladder. After the tumor is large enough or the wall of the abdomen sufficiently thin or relaxed or an anesthetic is used, palpation of a fixed mass in the epigastrium in the median or just to the right of the median line, and associated with pain and jaundice, such a diagnosis may be made before emaciation, weakness, cachexia and other signs occur. Buckstein[12] reported a case of tumor of the head of the pancreas in which a wide duodenal curve was revealed by roentgen-ray examination and the duodenal tube, and

6. Bennett, T. I.: Brit. M. J. 2: 275 (Aug. 18) 1923.
7. Kelsh and Keiner: Arch. Phys. 2: 622, 1876.
8. Counseller, V. S., and McIndoe, A. H.: Primary Carcinoma of the Liver, Arch. Int. Med. 37: 363 (March) 1926.
9. Torland, T.: Northwest Med. 21: 253 (Aug.) 1922.
10. Brulé, cited by Castaigne, J.: Traité de pathologie médicale de thérapeutique appliquée, Paris 12: 383, 1923.
11. Foot, N. C.; Carter, B. N., and Flipse, M. J.: Am. J. M. Sc. 167: 76 (Jan.) 1924.
12. Buckstein, Jacob: Surg. Gynec. Obst. 39: 509 (Oct.) 1924.

made possible a clinical diagnosis confirmed by operation; but my own experience in wide duodenal curves has been disappointing as a diagnostic criterion, as a number of causes may produce a radiologic picture of this type. Cachexia, with anemia and wasting, which may be rapid, terminating life in a few weeks, constitutes, with abdominal pain and jaundice, a sufficient picture for the diagnosis. Absence of pancreatic ferments, fatty diarrhea, urinary crystals and other subsidiary signs may be helpful in doubtful cases, but surgical exploration should be resorted to for diagnosis before fine, hair splitting chemical evidences are invoked. No criteria whatever could be conclusive in such cases as the one first referred to and reported by Foot, Carter and Flipse, which presented a symptomatology pointing to the brain, and thought by them to be a cerebellar tumor or abscess; but postmortem revealed a neuroblastoma or carcinoma of the head of the pancreas, with an insignificant clinical history of three weeks. The patient complained of a knifelike pain in the back of the head, radiating down the back and neck and causing stiffness and retraction. Vomiting occurred two weeks before, and the patient was still at work. Neither the previous history nor the physical examination in this case justifies suspicion of the pancreas.

COLON

About 75 per cent of cancers in the large bowel occur in the sigmoid and rectum. The cecum, splenic flexure and hepatic flexure come next in frequency. Slesinger [13] classifies these malignant growths as being scirrhous or encircling, soft, encephaloid or cauliflower, or infiltrating colloid; and he infers that irritation produced by stasis results in bands, increasing the mechanical difficulties of elimination and thus furnishing the chronic irritation background for the neoplasm.

The age incidence again includes 40 to 70 years, but evidence in the young is increasing. Erdmann and Carter [14] give an illuminating diagram of 129 cases of cancer of the colon in which operation was performed by Erdmann in the Post-Graduate Hospital in New York in 1922, which showed fifteen cases involving the terminal sac, hepatic flexure and proximal colon. This percentage of 0.012 probably closely approximates other surgical experiences. The oldest of his patients was 89, and the literature contains reports of cases down to the age of 3 years. The literature is full of reports, but they are largely surgical and frequently make little reference to the specific symptoms in the right upper quadrant.

Owing to the fluidity of the contents in the ascending colon, a greater degree of obstruction must be present as compared with the sigmoid and descending colon to arouse early suspicion from pronounced obstipation. Moreover, carcinoma of the colon seems to be more latent and to progress more slowly than those of any other important organs. This appears to be especially true with the right colon, where discomfort and anemia, even quite pronounced, may occur before signs of a malignant condition arouse attention. Such neoplasms are likely to be present with indefinite symptoms for two or three years before a clinical diagnosis is made. Tumor is not palpable in half of the cases and is frequently obscure and uncertain, particularly in the flexures.

The symptoms suggesting diagnostic criteria in the subhepatic region are:

1. Pain or discomfort, vague and indefinite, occurring occasionally at the site of the growth but often referred to the appendical or umbilical region. It may appear following meals or have no relation to food ingestion and be colicky in character and diffused over the abdomen, later to show more definite locus.

2. Diarrhea. In one previously normal or constipated and of cancer age, irregular attacks of loose bowels without appreciable cause, and recurring from time to time, should arouse suspicion and investigation. When there is obstruction, a more pronounced degree of constipation is present, usually relieved by laxatives and producing slight relief. Blood, pus and mucus in the stool are highly suggestive but apt to be present in descending colon cancer, while occult or open blood or none at all may be found in malignant growths of the ascending or first portion of the transverse colon.

3. Anemia and cachexia are usually much more pronounced in malignant conditions of this area, and in one of my cases a tumor of the cecum of three years' duration produced a blood picture almost identical with pernicious anemia and proved on postmortem to be a carcinoma. Jones and Hayden [15] observed this fact and attribute it to the bleeding from the adenomatous growth which occurs more frequently in the right side, and they quoted Sir Harold Stiles to the same effect, and he explained this fact by the larger absorptive surface and the more common ulcerative growth in this region.

Emaciation may not be pronounced as in cancer of the pancreas and stomach and may not attract attention even when complete obstruction supervenes. The foregoing symptoms in any patient of cancer age or persisting in the young are sufficient to arouse investigation, and call for two well nigh conclusive efforts at diagnosis:

(*a*) The barium clysma, not the gastric meal, which will reveal filling defects; but it must be remembered, as Slesinger states that "Lane's 'last kink' by itself will sometimes produce a roentgen-ray obstruction indistinguishable from cancer, and if this is combined with the presence of occult blood in the feces, exploration affords the only means of differential diagnosis."

(*b*) Surgical exploration. The well nigh universal use of these agencies steadily diminishes our diagnostic errors, and with the far earlier diagnosis now made the chances of the patient for curative surgery in this field are greatly enhanced.

ABSTRACT OF DISCUSSION

DR. JULIUS FRIEDENWALD, Baltimore: Dr. Graves has clearly shown the difficulties that may arise in the diagnosis of malignant disease of the upper right quadrant. Such difficulties, however, occur not only in the diagnosis of malignant disease but also with benign lesions. When one takes into consideration how extremely difficult it may become to differentiate, for instance, between duodenal ulcer and cholecystitis at times, and that even after a thorough clinical study, including roentgen-ray examination, the diagnosis can be established only after exploratory incision, it may be readily understood how much more complicated the diagnosis of malignant disease in this area becomes. According to our experience, the greatest difficulty is noted in differentiating at times between cholelithiasis and cancer of the liver involving the common duct. In the latter affection, in its early stages, the rather characteristic attacks of biliary colic with jaundice and periods of relief point to cholelithiasis for some

13. Slesinger, E. G.: M. J. & Record **120**: 17 (July 16) 1924.
14. Erdmann, J. F., and Carter, R. F.: New York M. J. **115**: 649 (June 7) 1922.
15. Jones, D. F., and Hayden, E. P.: Boston M. & S. J. **191**: 471 (Sept. 11) 1924.

time until finally the symptoms of cancer become evident. The difficulties in differentiating between chronic pancreatitis and cancer of the pancreas are so well known that even following exploratory incision the diagnosis may remain uncertain. Finally, I should like again to call attention to a special train of symptoms pointing directly to cancer of the pancreas. In the earlier stages of this disease, the symptoms referable to disorder of the gastro-intestinal tract in the form of a simple dyspepsia are manifested. There is usually constipation which is rapidly transformed into diarrhea. The diarrhea becomes more and more intense and occasionally bulky, tarry and fatty stools are observed. After a longer or shorter time jaundice appears, which gradually becomes more and more pronounced. The urine at times contains sugar; the liver enlarges and becomes nodulated, and further evidences of a malignant condition are noted. This affection is of such frequent occurrence that whenever a persistent diarrhea is observed in persons over 40 years of age which cannot be accounted for by the usual causes, carcinoma of the pancreas should be borne in mind. The newer methods of examination, that is, cholecystography, the liver functional tests, the examination for the duodenal ferments obtained by means of the duodenal tube as well as the Lyon method of biliary drainage, have added materially to our means of diagnosis; but, when all is said and done, the greatest reliance in diagnosis must be based, as Dr. Graves has said, on a carefully obtained history, with a thorough physical examination.

SKIN TESTS IN MEASLES *

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In skin tests with killed cultures of the green-producing diplococcus from measles, Tunnicliff [1] obtained positive reactions in 100 per cent of persons who had not had measles, and in only 4 per cent of those with a history of measles. This intracellular toxin was neutralized in persons with a negative history of measles by convalescent human measles serum, but not by the serum of a person who had not had measles. The toxin was neutralized in rabbits by convalescent human measles serum and by the serum of goats convalescing from the reaction produced by measles diplococci, but not by normal goat serum. The measles toxin produced reactions in normal rabbits, but not in rabbits immunized against measles. Berkefeld W filtrates of cultures of measles diplococci failed to produce any reactions.

Recently, Ferry and Fisher [2] have demonstrated an extracellular toxin in filtered cultures of green-producing streptococci from measles with which they produce skin reactions in 40 per cent of persons with a negative history of measles and in only 3 per cent of persons with a history of measles.

Since most of the filtrates used by us were from cultures containing ascites fluid from adults who had probably had measles, it was thought possible that the ascites fluid neutralized the extracellular toxin as formed. Another attempt has now been made to produce an extracellular toxin with the strain of measles diplococcus whose intracellular toxin produced the specific skin reactions in the previous experiments. Filtrates of 0.2 per cent dextrose broth cultures grown six days at 36 C. produced no extracellular toxins, but filtrates of cultures grown six or seven days in 1 per cent sheep blood, 0.2 per cent dextrose broth, gave a definite reaction in a dilution of 1:10. One-tenth cubic centimeter of the toxin was injected intradermally and the test read after eight hours and again after twenty-one hours. The reaction consisted of a circumscribed area of erythema about 1 cm. in diameter. There was no reaction with the toxin boiled one hour and used as a control, except occasionally. The tests in individuals showing these pseudoreactions were not included. Of twenty persons who gave a history of not having had measles, ten gave positive reactions. One of these positive tests was in an infant 4 months old. Two of the children with positive skin tests showed no reaction on later receiving two more skin tests. A nurse with a negative history of measles and with a history of repeated exposure gave a negative skin test. None of the twelve persons with a history of measles gave positive skin reactions. The tests, with the exception noted, were given to persons over 1 year old.

The extracellular toxin was neutralized by convalescent human measles serum and by the serum of a goat immunized with green-producing measles diplococci, but not by normal goat serum. The mixtures of equal parts of toxin and serum were incubated one hour, and 0.1 cc. was injected intradermally. The mixtures with goat serum were injected into rabbits, those with human serum into human beings.

These experiments show that skin tests with extracellular diplococcus toxin (filtrate) give positive skin reactions in 50 per cent of persons who have not had measles. This is a slightly higher percentage of positive reactions than that obtained by Ferry and Fisher,[2] but both are much lower than the 100 per cent of positive reactions observed by Tunnicliff by the use of intracellular toxins. Since about 98 per cent of all persons over 6 months old are susceptible to measles, one would expect positive skin reactions in this percentage of persons who had not had measles.

CONCLUSIONS

The green-producing diplococcus associated with measles produces an extracellular toxin which gives a definite specific skin reaction in persons with a negative history of measles, but not in those with a positive history. The toxin is neutralized by convalescent human measles serum and by the serum of goats immunized with measles diplococci, but not by normal goat serum.

These experiments indicate that antigens of killed measles diplococci (intracellular toxin) would be more effective for susceptibility tests than extracellular toxins on account of the former giving positive skin tests in about twice as many persons susceptible to measles as intracellular toxins (filtrates).

* From the John McCormick Institute for Infectious Diseases.

1. Tunnicliff, Ruth: J. Infect. Dis. 37: 193 (Sept.) 1925.
2. Ferry, N. S., and Fisher, L. W.: Measles Toxin, J. A. M. A. 86: 932 (March 27) 1926.

Ulcer of the Stomach.—A diagnosis of ulcer of the stomach, pylorus or duodenum can frequently be made by the duodenal bucket and the string test. The bucket under these conditions contains a bile-stained fluid, the string next to the bucket is golden yellow, and there is on the string a localized blood stain at some distance from the lips (from 15 to 24 inches); if the stain is situated between 15 and 16 inches it indicates a cardiac, between 16 and 21 a lesser curvature, between 21 and 22 pyloric, and between 22 and 24 duodenal ulcer. The bucket returning with bile, and the string being golden yellow below 23 inches from the lips, indicates permeability of the pylorus for the bucket (size 23 French). The bucket having sojourned in the digestive tract from eight to ten hours (over night) with a length of string measuring from the lips more than 25 inches, without bile in the bucket or a yellow color of the string next to it, indicates pyloric stenosis (excepting in cases of jaundice).—Einhorn, Max: The Duodenal Tube; F. A. Davis Company, 1926.

ETIOLOGY AND DIAGNOSIS OF INTRA-UTERINE FETAL DEATH

REPORT OF CASE, WITH EXPERIMENTAL STUDY *

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Fetal syphilis, fetal anomalies, toxemias of pregnancy and maternal acute infections have long been recognized as causes of intra-uterine fetal death at any time during pregnancy. When no cause could be demonstrated for the death of the fetus, cases were classified as idiopathic. In the last decade certain observers, namely, De Lee [1] and Curtis,[2] have assumed and have more or less completely verified infectious organisms as the cause for intra-uterine fetal death. Of necessity, the verification beyond a reasonable doubt of such organisms being the cause of the death of the fetus in utero presents numerous obstacles, and in many instances only probable or presumable data can be obtained in support of such a view. It would seem important, in view of the limited number of cases on record, to study as completely as possible cases that give indication of falling into this class, and to place them on record. It was with this idea in mind that we present the results of study of the following case:

REPORT OF CASE AND EXPERIMENTS

A primipara, an American, aged 18, whose family and past medical and surgical histories were essentially negative, entered the University Hospital and on examination was found about twenty-nine weeks pregnant. The history of the pregnancy was normal up to admission to the hospital. Examination revealed normal heart and lungs. The teeth were in good condition, and roentgen-ray examination showed no apical infection. No evidence of venereal disease was present. The position of the fetus in utero was occiput right anterior; the head was not engaged, and the fetal heart tones were clear, 152 to the minute. The mother's pulse was 88; the temperature, 98.2; respirations, 22. The systolic blood pressure was 120; diastolic, 60. The routine weekly antepartum urine examinations were negative. Culture of the urine twelve days post partum was sterile and a direct smear of the centrifugalized sediment showed no organisms. Blood examination showed: red blood cells, 4,210,000; hemoglobin, 90 per cent, and white blood cells, 7,800. The Wassermann reaction was negative, February 17, March 31 and April 20, 1926. Cultures of the nose, throat and cervix were negative for streptococci.

March 18, a routine antepartum examination revealed beginning engagement, with the position occiput anterior and left, and the heart tones, 164. The systolic blood pressure was 134; diastolic, 66.

March 26, the head was not engaged; the position was occiput right anterior, and the fetal heart tones were not heard. The patient complained of not having felt fetal movements for three days.

March 27, definite crepitus was obtained on grasping the fetal head through the abdominal wall, indicating maceration of the head. Roentgenograms revealed definite overriding of the bones of the skull, indicating shrinkage of the cranial content due to maceration, as first described by Spalding.[3] The long bones showed no widening of Guérin's line. Spontaneous labor did not supervene, so Watson's method of inducing labor was tried and the patient delivered a macerated fetus after craniotomy when the head reached the perineum, April 3. The fetus showed no deformity; the placenta and cord showed no anomalies, and the cord was not about the neck of the fetus. The puerperium was symptomless and afebrile. The necropsy report of the fetus revealed the weight to be 1,644 Gm. with nothing to account for the death, except that a culture of the heart's blood revealed a hemolytic streptococcus. The tissues were so badly macerated that gross evidence of bacterial pathologic change was not distinguishable. A Levaditi stain on the suprarenal tissue showed no spirochetes.

In considering the necropsy report of the fetus, it was thought valuable to determine whether the streptococcus recovered from the fetus would produce intra-uterine fetal death when injected into pregnant animals. On culture, the organism grew comparatively rapidly with a very definite zone of hemolysis surrounding the colonies, and microscopically was found to be gram-positive and to grow in long chains. Twenty-four hour dextrose meat infusion cultures of this organism were made and used for intravenous injection into pregnant rabbits.

In rabbit 1, which was about twelve days pregnant, 0.5 cc. of the culture was injected into the ear vein. The rabbit showed no symptoms following injection, and four days later a similar dose was injected, without symptoms appearing. Two days after the second injection, a necropsy was done on the rabbit, and no evidence of visceral pathologic change was found except that the right horn of the uterus showed five, and the left horn, two, nodules which were twice the diameter of the rest of the uterus. The veins of the broad ligaments on each side were thrombosed in places and distended in others, and over one or two of the nodules on the peritoneal surface were noted small amounts of fibrin. There were no adhesions present. On cut section, these nodules showed marked thickening of the lining membrane of the uterus, but no evidence of fetuses. Microscopic examination showed hyperplasia of the muscularis and mucosa.

In rabbit 2, 0.8 cc. of the culture was injected into the ear vein, and two days later the animal was anesthetized, laparotomy was performed, and the uterus delivered. The fetuses showed no sign of life, either in the uterus or when delivered by section of it. Cross incision of the superficial arteries of one fetus showed no bleeding, indicating lack of circulation. The rabbit was killed and the uterus removed, after a culture was taken from the amniotic fluid and a vein in the broad ligament. The viscera showed no pathologic change other than slight parenchymatous degeneration of the liver, spleen and kidney. After incubation of forty-eight hours, the cultures from the amniotic fluid, the broad ligament vein and the heart's blood showed pure cultures of a hemolytic streptococcus, which had the cultural and microscopic characteristics of the organism injected. This rabbit was three weeks pregnant.

In rabbit 3, about three weeks pregnant, 0.8 cc. of the culture was injected into the ear vein, and one week later the rabbit was anesthetized, laparotomy was performed and the uterus delivered. The fetuses were living, as evidenced by movements within the uterus and attempts at respiration after delivery by section. The rabbit was killed and a necropsy done, but no evidence of gross visceral pathologic change was found. Cultures were taken from a vein in the broad ligament and the amniotic fluid and remained sterile after forty-eight hours' incubation.

In rabbit 4, about three weeks pregnant, 2.4 cc. of the culture was injected into the ear vein. During the ensuing thirty-six hours the rabbit seemed to be somewhat sick, and at the end of forty-four hours was found to have miscarried six dead fetuses. Cultures from the peritoneal fluid of these fetuses remained sterile after forty-eight hours, but a direct smear revealed a streptococcus which was microscopically identical with the organism injected.

COMMENT

In rabbit 1, nodulation of the uterus at necrospy was the only evidence remaining of pregnancy. The length of time between injection and necropsy might very well have been sufficient for complete absorption of the fetuses to occur in a pregnancy of less than two weeks.

* From the Department of Obstetrics, State University of Iowa College of Medicine.

1. De Lee, J. B.: A Bacteriologic Study of the Causes of Some Stillbirths, J. A. M. A. 67: 344 (July 29) 1916.
2. Curtis, A. H.: Streptococcus Infection as a Cause of Spontaneous Abortion, J. A. M. A. 67: 1739 (Dec. 9) 1916; Spontaneous Recurrent Abortion, ibid. 84: 1262 (April 25) 1925.
3. Spalding, A. B.: A Pathognomonic Sign of Intra-Uterine Death, Surg. Gynec. Obst. 34: 754 (June) 1922.

Our inference was that this had occurred. Rabbit 2 showed the fetuses dead in utero at laparotomy, with streptococci in pure culture in the amniotic fluid and uterine circulation, giving strong evidence that intra-uterine fetal death was due to the organism injected. The presence of living fetuses in rabbit 3, plus the absence of streptococci in the amniotic fluid and uterine circulation, while a negative result, is in direct contrast to rabbit 2. Why intra-uterine fetal death in rabbit 3 did not occur is a question, but might be hypothetically explained by assuming the failure of the organism to reach the uterine circulation. By tripling the dose in rabbit 4, spontaneous abortion was produced and the organism demonstrated in the fetuses. Rabbit 4 remained living and well.

This experience with animal inoculation furnishes confirmatory evidence that the cause of intra-uterine fetal death was probably the streptococcus found in the fetus.

CONCLUSION

In a clinically healthy mother, a fetus apparently succumbed in utero to a hematogenous streptococcal infection.

Clinical Notes, Suggestions and New Instruments

NATIVE INFESTATION BY THE FISH TAPEWORM, DIPHYLLOBOTHRIUM LATUM

REPORT OF A CASE IN DETROIT

DAVID J. LEVY, M.D., AND MERLE PIERSON, M.D., DETROIT

This case of native infestation by the fish tapeworm, *Diphyllobothrium latum*, is reported for the purpose of adding a tenth case to the literature, and as bearing on the prognostication made by Warthin,[1] and again by Lyon[2] as to an increase of the native occurrence of this parasite to be awaited in the Great Lakes region. Warthin investigated and reported in 1912 on the frequent incidence of *Diphyllobothrium latum* infestation in foreign born Swedes and Finns in northern Michigan, and the finding of the larvae of *Diphyllobothrium latum* in fish caught in sewage-contaminated water in districts occupied by immigrants of these nationalities. He proved the existence of all conditions prerequisite to the transmission of the parasite through the eating of native fish, and forecast an increasing incidence of such occurrence. The literature is adequately referred to in the recent paper by Lyon, and will not be reviewed here.

The patient, a girl, was born of Jewish parents, March 27, 1922, in Detroit. The parents were both born in Russia but have been in this country since 1906. No member of the family gives a history of having had a tapeworm. Except for two summers in Atlantic City, the child has always lived in Detroit. However, the father was certain that she had never eaten fish at the former place, although she had been given fish, some of it raw, at times since she was a year old. The fish was all procured from local markets. None of it was smoked and none of it was imported.

The child was brought to the office for examination, Jan. 9, 1925, with a history of having passed, about three months previously, several feet of tapeworm, and again, three weeks previously, from 10 to 15 yards of the parasite. The father, who is a druggist, had thereupon administered santonin to the child. During the subsequent weeks, the child had been constipated and had been restless and irritable, with slight elevations of temperature. The child was pale and somewhat undernourished, and weighed 25 pounds (11.3 kg.). The rectal temperature was 100 F. She had reddened hypertrophic tonsils; save for this fact, the physical examination was negative. At this time, her hemoglobin was 90 per cent; the white cells were normal in number and differential count, and the red cells on microscopic examination showed no undue paleness or asymmetry. Unfortunately, a count of the red cells was not made. A salicylate was ordered for the relief of the mild tonsillitis, and aspidium was prescribed to be given on the subsidence of this acute attack.

The child was seen again, January 26, with a history of having had frequent attacks of cramplike abdominal pains since the foregoing visit, so that the vermifuge had not been administered. A stool specimen submitted at this time showed numerous ova of *Diphyllobothrium*. The white cells numbered 10,000 per cubic millimeter, with 68 per cent polymorphonuclears. Because of the symptoms suggestive of appendicitis in the case, a roentgenogram of the gastro-intestinal tract was ordered and the following conclusions as to the roentgen-ray examination were submitted by Drs. Hickey, Evans and Reynolds:

"We would conclude from this patient's gastro-intestinal examination that there is no organic lesion of the stomach, duodenum or small or large bowels. The stomach is of average size and it emptied its contents at an even rate. There was normal motility of the barium through the small intestine. There was considerable colonic retention of barium in the lumen of the appendix, and there was pericecal and periappendical tenderness. These are the usual findings in chronic appendicitis."

January 31, the father reported that the child had severe abdominal pain on taking a cathartic, and she was refered to the surgeon for examination as to her appendix. A diagnosis of chronic appendicitis was made by him. On the subsidence of the abdominal symptoms aspidium was administered, but the child did not pass the worm. Late in February, the child had an acute upper respiratory infection, and paracentesis of the ears was performed. Subsequent to this, the child was given aspidium in the same dosage, 15 minims (1 cc.) as previously. She thereupon passed the worm, the segments of which tapered down to 1 mm., although no head was found. The specimen of tapeworm was submitted to Dr. A. S. Warthin for identification, who confirmed our recognition of the worm as *Diphyllobothrium latum*. It is of interest and importance to note that with the passing of the worm all appendicitis-like abdominal pain disappeared and has not recurred to this date (May 19, 1926). During the summer of 1925 the child was examined by another physician who, on the strength of the history of tapeworm, gave another course of aspidium without, however, bringing forth any further segments of worm.

1. Warthin, A. S.: Pub. Health, Michigan 7:78 (Jan.-March) 1912.
2. Lyon, M. W., Jr.: Native Case of Infestation by the Fish Tapeworm, Diphyllobothrium Latum, J. A. M. A. 86:264 (Jan. 23) 1926.

HUMAN INFECTION WITH BRUCELLA MELITENSIS, VARIETY ABORTUS, TREATED WITH MERCUROCHROME

E. E. GAGE, M.D., AND D. A. GREGORY, M.D., SIOUX FALLS, S. D.

The bacteriology of the organisms causing Malta fever and infectious abortion of cattle has been extensively studied, especially by Evans,[1] who has classified them into three main groups. Using forty strains, she showed that the majority of human, bovine, porcine, equine and caprine strains of organisms of the genus *Brucella* could be separated into three main groups.

The majority of bovine and porcine strains fall into a group designated as *Brucella melitensis*, variety *abortus*. This includes the organism of infectious abortion of cattle, which was known as *B. abortus* (Bang).

A second large group includes strains from human, caprine, bovine and equine origins and is designated as variety *melitensis* A.

A third group, characterized by the occurrence of coccoid forms, is probably the variety that Bruce was working with when he discovered his *Micrococcus melitensis*. It is designated variety *melitensis* B.

1. Evans, Alice C.: The Nomenclature of the Melitensis-Abortus Group of Bacterial Organisms, Pub. Health Rep. 38: 1943-1948 (Aug. 24) 1923; The Serological Classification of Brucella Melitensis from Human Bovine, Caprine, Porcine and Equine Sources, ibid. 38: 1948-1963 (Aug. 24) 1923; Malta Fever: Cattle Suggested as a Possible Source of Infection, Following a Serological Study of Human Serums, ibid. 39: 501-518 (March 14) 1924.

Simple agglutination tests do not differentiate these varieties, and it is necessary to do absorption of the agglutinins to differentiate the organism known as *B. abortus* (Bang) from that causing true Malta fever.

Malta fever has been reported from the United States, especially the Southwest. I cannot find any reference to its having been previously reported from South Dakota. Lake[2] reviewed the history of Malta fever in the United States.

Keefer[3] has reported a case of Malta fever, variety *abortus*, in which the infection was contracted in Baltimore. This is the first case of this type to be reported in the United States.

The case reported was observed about three months:

H. M., a white man, aged 33, married, seen by one of us (E. E. G.) about March 20, 1924, complained of aching of the back and legs, chills, fever and sweats. He had been sick for three or four days, with gradual onset characterized by headache and malaise, and suffered from constipation. He was treated symptomatically at home for several days, as the physical examination was negative. He improved, but several days later his symptoms recurred and blood cultures were made. These were reported negative after three days' incubation. The blood count and urine were normal. The Wassermann reaction was negative. Casual reexamination of the old blood cultures showed a small, gram-negative nonmotile organism not fermenting carbohydrates. This organism was agglutinated by the patient's serum in high dilutions. From April 18, 1924, to April 24, 1924, he was a patient in McKennon Hospital. Physical examination was negative. Laboratory examinations were negative except for the positive blood culture, which was repeated with positive results and the agglutination reaction against the isolated organism. His temperature ranged to 103 F., pulse to 100 maximum. He was discharged, April 24, improved, with normal temperature. He was readmitted, May 13, with temperature 101.4 F. and pulse 100. While at home his headache, fever and sweats recurred. May 18, confirmation was received from the Hygienic Laboratory that the culture was *Brucella melitensis*, variety *abortus*. May 16 and May 22 he was given 0.2 Gm. of neutral acriflavine intravenously, but it had no effect on the disease. June 2 he was given 0.22 Gm. of mercurochrome-220 soluble intravenously. This was followed by a severe chill, vomiting, bloody diarrhea and a marked decrease in urinary output. He was given Fisher's solution intravenously with rapid recovery and left the hospital, June 5. He was afebrile at that time and has remained so since.

Type strains of *Brucella melitensis*, var. *abortus*, var. A and B, were obtained from the Hygienic Laboratory and absorption tests showed that the agglutinins of this patient's serum were absorbed for all varieties by the strain isolated and by the stock *abortus* strain, and only partially by the other two varieties.

Investigation showed that this patient had worked only in the hog killing department for the past five years. This is probably the source of the infection, as Weeter[4] showed that nongravid swine uteri may contain *B. abortus* (Bang).

Two cows that he was accustomed to milk were tested and did not show any agglutinins for *Brucella melitensis* in their blood. He was not in contact with goats.

It is interesting to note that neither Keefer's patient nor ours showed an enlarged spleen.

The symptoms of the case would confuse the diagnosis, as typhoid and tuberculosis were both suspected.

The patient's occupation brought his case before the board of civil service commissioners, who at first held that the disability did not arise out of the employment. If this should be brought before a workmen's compensation commission it would be interesting to see whether the commission held that it was an occupational disease, as I think it was in this case.

The infectivity of the *abortus* strain must be low for human beings, as the disease is not uncommon in dairy herds and much unpasteurized milk is sold.

2. Lake, G. C.: Malta Fever in Southwestern United States, Pub. Health Rep. **37**: 2895-2899 (Nov. 24) 1922.
3. Keefer, C. S.: Report of a Case of Malta Fever Originating in Baltimore, Maryland, Bull. Johns Hopkins Hosp. **35**: 6 (Jan.) 1924.
4. Weeter, H. M.: Infectious Abortion in Domestic Animals, J. Infect. Dis. **32**: 401-416 (June) 1923.

New and Nonofficial Remedies

EPHEDRINE

Preliminary Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following statement of the experimental status of ephedrine.

W. A. PUCKNER, Secretary.

Ephedrine is an alkaloid first obtained by Nagai in 1887 from the Chinese drug ma huang, identified botanically as *Ephedra equisetina*, Bunge, and some other species of Ephedra.

Chemically, ephedrine is closely related to epinephrine. Ephedrine hydrochloride and ephedrine sulphate are soluble in water and alcohol. As the salts of epinephrine are levorotatory, so the salts of ephedrine deflect polarized light to the left; they differ from epinephrine salts in being more stable; the solutions are quite stable even on boiling. A 5 per cent solution of ephedrine hydrochloride kept at room temperature has been found unchanged at the end of six months. Ephedrine is stated to excite the sympathetic nervous system, and is claimed to produce a variety of effects similar to epinephrine. It also has been found to exert a direct depressant action on smooth and cardiac muscle. Its most important effects thus far reported consist in a rather lasting rise of blood pressure, on intravenous or intramuscular injection, due mainly to vasoconstriction. Other effects similar to epinephrine are dilatation of the bronchi and mydriasis after local or systemic administration. On local application it constricts the capillaries moderately. While it is not a styptic, it is reported to be of value in reducing swelling of the turbinated bodies and in diminishing hyperemia.

Salts of ephedrine are quite effective whether given orally, subcutaneously, intramuscularly, intravenously or by any ordinary path of administration.

Clinically, promising results have been reported from the use of ephedrine, especially in asthma and for shrinking the turbinated bodies. The average dose of the sulphate or hydrochloride is 0.06 Gm. (1 grain). This dose is usually adequate to relieve an attack of asthma.

Ephedrine is not very toxic to rabbits. Clinically, only minor side actions have been reported; one physician who gave in some cases more than 0.2 Gm. a day (which is more than recommended) reports that three out of twenty patients experienced nausea, bladder irritation and headache, which may have been due to other causes.

Ephedrine is being subjected actively to pharmacologic and clinical study. Further clinical work is required to establish the therapeutic usefulness of the drug.

The clinical trials which have been reported in this country have been carried out with ephedrine sulphate made in the laboratories of the Peking Union Medical College. The Council is informed that an American firm, the Abbott Laboratories, Chicago, will shortly be in a position to supply a salt of ephedrine obtained from this source.

Burroughs, Wellcome & Company of London, England, supplies ephedrine hydrochloride for experimental purposes. It has sent to the Council a specimen of the product and the tests and standards that are used for its control.

Eli Lilly and Company has announced that it is marketing ephedrine sulphate, containing a small amount of pseudoephedrine, under the name "Fedrin." The Council is considering the question of recognizing the proprietary name for this product, and the evidence for its value and control.

At the request of the Council, the A. M. A. Chemical Laboratory has taken up the establishment of standards for ephedrine hydrochloride and ephedrine sulphate. The importance of standardization is shown by a report received by the Council which brings out that a specimen, said to be ephedrine hydrochloride, was supplied by an American firm to a physician and turned out not to have the actions of ephedrine.

The Council has postponed the acceptance of ephedrine or its salts for N. N. R. to await confirmatory clinical evidence, and until acceptable brands of the drug are made available.

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SATURDAY, SEPTEMBER 11, 1926

CHEMISTRY IN AMERICA, 1876-1926

This week the American Chemical Society celebrates its golden jubilee, with the presence at its session in Philadelphia of renowned chemists from all the chemical centers of the world. From a membership of 230 in 1876, the society has grown to 15,000—the largest chemical society in the world and the third largest scientific organization in America, the American Medical Association being first.

Fifty years ago, chemistry was laying the foundation for its brilliant achievements. At the first meeting of the society in 1876, the disclosure was made of the discovery of a gas in uranite; the subsequent classic work of the Curies on radium has clarified what seemed at that time to be a mystery. At the same meeting, Morgan described the extraction of indigotine from indigo. The splendid work in Germany of Baeyer and others on the synthesis of indigo, which was responsible for making Germany supreme in chemistry for years, had not even been begun. To physicians it is especially interesting to note the paper on "A New Apparatus and Improved Method for the Estimation of Urea"; the modern work of the Folin and Van Slyke schools in this day shows the advancement in both refinement and simplification of clinical chemistry, which in turn has led to a vastly fuller appreciation by the physician and laboratory investigator of the intricacies of metabolism. Interesting also is the discussion of 1876 of the work on "Experimental Imitation of Protoplasm"—interesting because the same title might be given today, though the background now is vastly more resourceful than that of five decades ago. So the progress in the various branches of chemistry [1] in this span have been truly remarkable: mineral chemistry, which has made possible this automotive age; physical chemistry, probably the most essential branch for the further study of the human cell, which has conquered difficulty after difficulty—unheard of yesterday was the familiar "ion" of today or the p_H so glibly used by present-day medical research workers. Organic chemistry has left its stamp most indelibly on the medical profession. Fifty years ago the pharmacopeia contained drugs largely of vegetable origin; then came the flood of organic synthetics from abroad—good and bad—which fortunately of recent years, as a result of the ingenuity of American chemistry, are being superseded by domestic synthetics, fewer in number but greater in promise of therapeutic merit.[2] No longer the indefinite impure extract but the active substance is the gold of materia medica today; still fresh in our minds is the recent announcement of the preparation of crystalline insulin.[3] Fifty years from now, it is not too much to hope, the indefinite vaccine will have passed through its period of refinement.

As far as influence on medicine and health are concerned, the greatest strides have been made in the field of physiologic chemistry and nutrition. Most of the important biochemical advances have been made in America, though to stop with this statement would be unfair, because the part Germany played in educating American chemists stands out strongly. Yet it is with pride that we can point to the far reaching American discoveries made by the physicians and chemists in the fields of metabolism, vitamins, irradiation and organotherapy. A development that is characteristic in chemistry as well as in medicine has been the tendency to specialization. Fifty years ago the term "chemist" indicated a scientist with an encyclopedic mind, versed in all branches of chemistry, analytic, organic or general. Today it is difficult, if, indeed, not impossible, for a man to be master of any one branch of chemical science. In addition to the fields already mentioned, chemistry has influenced the development of agriculture, industry and education.

The physicians of America congratulate the chemists whose privilege it is to reveal in a golden jubilee a picture of their major accomplishments.

1. Excellent reviews of the advances, particularly from an academic standpoint, are given in the commemoration volume, Journal of the American Chemical Society, Aug. 20, 1926.

CLINICAL ASPECTS OF CHLORIDES IN THE BODY

The researches of recent years have afforded abundant illustration of the tendency of the living organism to maintain an effective neutrality regulation. Accumulation of acid or base in undue amounts is betrayed not primarily by noteworthy changes in the reaction of the circulating fluids of the body, but rather by a physiologic effort to dispose of or neutralize the undesired excesses. Under such circumstances the urine may carry away considerable quantities of acid-reacting compounds. The presence of an unusual amount of acid ions in the blood leads to augmentation of respiration, a process that dispels the volatile carbon dioxide from the system and thus tends to reduce the actual acidity that induced the change.

2. Leech, P. N.: Standardization and Evaluation of Medicinals, Indust. & Engin. Chem., September, 1926.
3. Crystalline Insulin—Another Chemical Triumph, editorial, J. A. M. A. 86: 350 (Jan. 30) 1926.

Fixed acidic factors thus leave through the kidneys, while volatile ones find an exit by way of the lungs. The outcome in either event is a tendency toward the restoration of the normal physiologic reaction or hydrogen ion concentration. Excess of base is compensated for by production and retention of acid derivatives of metabolism in some instances.

Biochemical investigation is at present bringing to light the importance of chloride as well as bicarbonate in the regulatory functions.[1] It is further indicating the significance of the attempted maintenance of a "normal" total salt or electrolyte concentration of the blood. This is a feature, related to the osmotic pressure of the fluid, that was stressed a few years ago more than it is today. Chlorides, omnipresent in the blood and body fluids, are significantly involved in this manifestation of electrolyte concentration. It has long been recognized that the body conserves its chlorides when their intake is greatly decreased; thus, in starvation or on a salt-free diet the urinary secretion of chloride is reduced to a minimal quantity. But chloride may be lost to the organism in less readily suspected ways, such as through severe diarrhea or vomiting. The latter sometimes occurs in cases of pyloric or intestinal obstruction.

The consequences of such events have been depicted by Hartmann and Smyth[2] as the outcome of clinical studies in the Department of Pediatrics of the Washington University School of Medicine at St. Louis. As chloride diminishes in the blood because of losses from the body, bicarbonate is retained and compensates at least in part for the deficiency in electrolyte, so that the total salt concentration still remains nearly normal. The St. Louis investigators have made the added significant discovery that when the loss of sodium chloride in the blood is not fully replaced by sodium bicarbonate, the nonprotein nitrogen becomes elevated in the evident effort to keep the osmotic pressure normal. The assumption that urea, for example, may be retained in the blood, not merely because of defective renal function but also in order to preserve osmotic equilibrium in the blood when there is a shortage of chloride and bicarbonate challenges attention.

Treatment with chloride is thus brought into a new prominence. When the deficiency of sodium chloride in the blood disappears as a result of the administration of the salt, the excess of nonprotein nitrogen and sodium bicarbonate in the blood is rapidly excreted through the kidneys. According to Hartmann and Smyth, excretion of sodium bicarbonate, sodium chloride and nonprotein nitrogen depends on the total concentration of crystalloid—electrolyte and nonelectrolyte—in the blood. When this concentration is less than normal, sodium bicarbonate is retained in the blood, and the urine remains acid in reaction despite the existence of a greatly increased plasma content of carbon dioxide. Plasma chloride is assuming an undeniable place of importance in the scheme of clinical diagnosis. The chlorides have their proper place not only in acid-base adjustments but also in the preservation of conditions that enable the body to hold its normal water content.

1. Chloride in Diabetic Acidosis, editorial, J. A. M. A. **86**: 752 (March 13) 1926.
2. Hartmann, A. F., and Smyth, F. S.: Chemical Changes in the Body Occurring as the Result of Vomiting, Am. J. Dis. Child. **32**: 1 (July) 1926.

SYMPATHETIC RAMISECTION FOR THE RELIEF OF SPASTICITY

Is there a physiologic basis for the surgical operation of ramisectomy as a relief in spasticity of the extremities? Is the operation successful? The latter may be true without the former, but the history of the solution of other scientific problems would not bear out such a supposition. Since Hunter's untimely death, the larger number of scientific contributions have appeared from those whose conclusions diametrically oppose those of Royle and Hunter. These contributions have included both experimental and clinical data. In this issue Dr. Royle[1] presents his view of these observations, contributing, however, no further scientific facts as evidence of his beliefs.

Royle's criticisms of the work of Kanavel, Pollock and Davis are concerned for the most part with the type of animal and the method of decerebration used in their experiments, together with a statement that the patients reported on by them were not suited for the operation. In this connection it is interesting to note that the work of these observers has been fully corroborated by Ranson, Forbes and Cannon, Meek and Crawford and others. Forbes and Cannon[2] used cats in their experiments and decerebrated their animals by the Sherrington method, which of course is the method used by Royle. Their statement that "if there were a physiologic phenomenon of significance for mammals in general and therefore having a bearing on human surgery, it should be possible to demonstrate it in the cat" is quite applicable. It is also interesting to note that in their report of the three patients operated on eighteen months previously, Davis and Kanavel have stated that two of the patients were operated on by Dr. Royle and that all three had been chosen by him from a large group of children as the cases most suitable for operation.

Not all the evidence contrary to the practice of Royle and the theory of Hunter has been confined to this country. In an interesting symposium on the "Sympathetic Innervation of Striated Muscle" presented before the Section of Neurology of the Royal Society of Medicine, Bankart and Jefferson[3] reported on the result of their operative procedures on patients

1. Royle, N. D.: The Surgical Treatment of Spastic Paralysis by Sympathetic Ramisection, Correspondence, this issue, p. 868.
2. Forbes, Alexander; Cannon, W. B.; O'Connor, J.; Hopkins, A. M., and Miller, R. H.: Muscular Rigidity With and Without Sympathetic Innervation, Arch. Surg. **13**: 303 (Sept.) 1926.
3. Bankart and Jefferson: Proc. Roy. Soc. Med. **19**, August, 1926, Sec. Neurol.

with spastic extremities. Both of these surgeons make the rather bald statement that the operations did no real good. Further, considerable doubt has been thrown on the accuracy of Kulchitsky's histologic evidence and Langellan's theory of muscle tone, on both of which premises much of Hunter's theory was based. As Walshe has pointed out, Trendelenburg twenty years ago performed experiments on the wing of the fowl similar to those of Hunter but with opposite results. It has been suggested and may be repeated frequently and appropriately that in the absence of published careful anatomic control observations, injury to the ventral root provided a probable explanation of Hunter's results.

It would seem that the most aid that could be given in support of the theoretical and practical aspects of the subject might come from added reports of carefully controlled scientific experimental and clinical observations. The final conclusion of Forbes and Cannon is a challenge to the supporters of this theory to produce just such work. It bears repetition: "We conclude that if there is any loss of tonus in consequence of the operation it is insignificant. Certainly decerebrate rigidity persists, at least approximately undiminished, and manifests its plastic features after sympathectomy. This conclusion removes the alleged physiologic basis for the surgical operation of ramisection as a cure for spasticity. If patients are in reality improved in consequence of this operation, it is probably due to some incidental feature of their treatment, and not to the interruption of nerve impulses arising in the sympathetic nervous system."

VITAMIN B AND GASTRIC MOTILITY

The pathogenesis of the various conditions now commonly classed as avitaminoses is by no means clear as yet. For the most part, information is restricted to the description of symptoms that are characteristic of the disordered nutritive condition following a prolonged lack of any of the familiar vitamins. Xerophthalmia and the lesions of scurvy are illustrative of this statement. The studies of Wolbach and his co-workers at the Harvard Medical School[1] have greatly advanced our knowledge of the tissue upsets that may arise when there is a deficiency of vitamin A and vitamin C, respectively, in the diet. The function of vitamin B remains more obscure, though there has not been a lack of hypothesis to account for the behavior of this more ubiquitous food factor. Thus, Cramer[2] and his associates in London believe that vitamin B functions in a peculiarly specific manner to promote the activity of the lymphoid tissues; and they attribute the alimentary disturbances characteristic of B avitaminosis to altered function of these structures. A recent writer has remarked, however, that even though the pathologic findings of Cramer with respect to the lymph nodes located along the alimentary tract should be correct, they would not prove that the primary organic factor in the avitaminosis is failure of the lymphoid tissue to act in a normal manner. McCarrison and others have observed that hypertrophy of the suprarenal glands is characteristic of conditions associated with a deficiency of vitamin B, so that one would be equally justified perhaps in attributing the symptoms to suprarenal dysfunction. Recently it has also been suggested that vitamin B may be the precursor of certain alimentary enzymes.[3]

Experimentally it has been demonstrated, notably by Karr[4] and Cowgill[5] at Yale University, that a progressive loss of appetite attends the institution of a regimen poor in vitamin B. The investigations of Cowgill, Deuel, Plummer and Messer[6] suggest that this may be associated in some way with the "hunger contractions" characteristic of the empty stomach. In mild cases of experimental vitamin B deficiency associated with anorexia, they did not observe any remarkable change in these contractions. The rhythmic tonus so carefully described by Carlson is frequently absent, and the number of contractions in a series may be somewhat less. In severe cases of this deficiency, however, in which anorexia is attended with nervous and muscular symptoms, there is gastric atony. Successful vitamin therapy applied to such conditions is associated with a rapid improvement in tone of the stomach musculature. Furthermore, the continued feeding of liberal quantities of vitamin B to an organism subsisting on a diet adequate in other respects aids in maintaining a satisfactory gastric tonicity.

The investigators[6] of these phenomena frankly admit that it is difficult, when dealing with such a parallelism as has been described, to decide whether or not vitamin B maintains the desire to eat simply by aiding in the preservation of the normal gastric tone. The marked systemic manifestations characteristic of advanced cases of vitamin B deficiency suggest that the loss of the desire to eat in such cases is due as much to a generalized systemic disturbance as it is to an abnormal condition localized in the alimentary canal. The demonstration of gastric atony as a part of the syndrome characteristic of an advanced stage of deficiency disease in which lack of vitamin B is concerned is in harmony with clinical observations on patients with beriberi. The list of disorders attended with gastric atony is a long one, including high fever, parathyroid tetany, acute gastritis, pneumonia and general peritonitis. It is also now demonstrated to characterize prolonged subsistence on a diet poor in

1. The Pathologic Conditions Induced by Deficiency of Vitamin A, editorial, J. A. M. A. 84: 1827 (June 13) 1925; A New Feature of Vitamin Deficiency, ibid. 85: 2035 (Dec. 26) 1925.

2. Cramer, W.; Drew, A. H., and Mottram, J. C.: Lancet 1: 963 (May 27) 1921; 2: 1902, 1922. Cramer, W.: Lancet 1: 1046 (May 26) 1923.

3. Farmer, C. J., and Redenbaugh, H. E.: Am. J. Physiol. 75: 45 (Dec.) 1925.

4. Karr, W. G.: J. Biol. Chem. 44: 255 (Nov.) 1920.

5. Cowgill, G. R.: Am. J. Physiol. 57: 420 (Oct.) 1921.

6. Cowgill, G. R.; Deuel, H. J., Jr.; Plummer, N., and Messer, F. C.: Studies in the Physiology of Vitamins, IV, Vitamin B in Relation to Gastric Motility, Am. J. Physiol. 77: 389 (July) 1926.

vitamin B. The suggestion has been made, therefore, that the dietary factor should never be overlooked where gastric atony is known to occur. Perhaps it also is concerned in the diseases that may follow faddist inclinations leading to a limited choice of food. In any event, gastric motility and faulty diet may now be linked together in the interpretation of certain disturbing symptoms.

Current Comment

THE BASAL METABOLISM OF VARIOUS TISSUES

In recent years basal metabolism, measured by the heat production of the body at rest and without food, has come to have especial significance for the clinician. He has learned to regard the basal "metabolic rate," as it is now familiarly termed, as something characteristic and fairly fixed in periods of health. Perturbations in this rate are therefore accepted as indications of some abnormality, precisely as are the deviations of the body temperature, respiration and pulse rate from accepted averages. Where do the chemical changes that the metabolic "rate" measures take place? It is well known that the large increments associated with work are attributable to energy transformations in the contractile tissues. The muscles themselves are the seat of the calorigenic changes; indeed, the altered temperatures of these tissues and the blood perfusing them give measurable evidence of what is taking place during contraction or changes in tension such as tonus represents. The total metabolism of the active body varies in proportion to the amount of muscular work that is being accomplished. In the body at rest, however, other tissues also play a part in the heat production. A recent review [1] of the known facts indicates that the basal rate of metabolism in muscle is low, from 0.5 to 1 calory per kilogram per hour. In the liver it reaches a height of from 10 to 20 calories, and in the other viscera it averages from 2 to 3 calories. The important contribution of that metabolically busy organ, the liver, to the metabolism of the resting body thus becomes apparent, particularly when the comparatively large size of this glandular structure is recalled.

CHILD WELFARE IN NEW ZEALAND

The experience of New Zealand in regard to infant mortality has often been referred to in recent years. Numerous countries that boast of a far older civilization and are located at the very seats of modern culture and scientific research are taking to heart the fact that their records in child welfare progress are being outdone by a distant small British colony that has only modest resources. The deaths of infants under one year of age there have reached the low rate of 40, said to be a world's record. A few details of how this saving of human life has been accomplished were recently set forth by our London correspondent.[1] He finds that the foremost contributory factor is the system of training and nursing founded by Sir Truby King less than two decades ago. The method of the nurses who go out to spread the gospel of healthy babyhood seems strangly familiar even to American ears: it aims "to bring simple common sense, enlightenment, and accurate scientific knowledge and conviction as to the fundamental needs of mother and child into the homes, lay and professional." The policy is to have at least one nurse for each 230 new babies and mothers so far as the advisory service is concerned. The best recommendation is the fact that other communities are now seeking New Zealand nurses or sending their disciples to the far away islands for training. The methods have been simple rather than complicated. After reading them and studying the work of such groups as the Infant Welfare Society of Chicago, recently reported by Grulee,[2] one wonders whether undue complexity is not being introduced into some of the current welfare work. At any rate, it is refreshing to learn that even in the poorer districts of a large municipality elaborate special formulas are scarcely required for successful feeding of the young. The armamentarium, when breast feeding cannot be undertaken successfully, is a simple one: it includes merely cow's milk, water, sugar, cereals, vegetables, orange juice or tomato juice, and cod liver oil.

A NARCOTIC SURVEY OF LOUISIANA

A report of a "narcotic survey" of Louisiana has been submitted by Dr. Carleton Simon to the Louisiana State Board of Health. The Louisiana narcotic law is one of the most comprehensive of its kind, extending into the field in a way impossible for federal legislation. Even if, as Dr. Simon suggests, it is possibly without provision for enforcement by fine and imprisonment, the authority it vests in the state board of health to refuse and to revoke registration and certificates and to deny to applicants the official blanks necessary to operate under the law would seem to be sufficient to make it effective. Many physicians in the state, however, regard certain provisions of the law as oppressive and believe that cooperation between the medical profession and the state board of health would be promoted by repealing the present law. During less than a month of personal investigation, Dr. Simon reports, he talked with hundreds of addicts on the streets and in their homes, and on the basis of information thus obtained he asserts that there are thousands of street addicts buying their narcotics illicitly through the underworld throughout the state. In addition to these addicts, others seem able to obtain whatever they need to satisfy their cravings through prescriptions openly given, apparently under authority of the state law. A questionnaire sent to 1,890 physicians brought replies from 779 and showed that fifty-one physicians during 1925 treated 260 "non-medical narcotic users." The number using narcotics

1. Hunt, H. B., and Bright, E. M.: Studies of the Conditions of Activity in Endocrine Glands, XVIII, Locus of the Calorigenic Action of Adrenalin with Observations on Tissue Metabolism, Am. J. Physiol. 77: 353 (July) 1926.

1. Child Welfare in New Zealand, J. A. M. A. 87: 110 (July 10) 1926.
2. Grulee, C. G.: Infant Feeding, J. A. M. A. 87: 137 (July 17) 1926.

in this way varied from one to sixty-four for the individual physicians from whom reports were received. An extremely large quantity of codeine is consumed in Louisiana, but this, Dr. Simon believes, has no connection with addiction. Its use has been largely increased by the reduction in available heroin as the result of federal legislation. In Dr. Simon's opinion, a connection between codeine and narcotic addiction has not been demonstrated, but the use of codeine may produce a familiarity with the action of narcotics and lead to a desire for the stronger opium derivatives. Its use is objectionable, too, in that it encourages the cultivation of the poppy plant, which the nations of the world are generally trying to limit, and stimulates the importation of opium into the United States, thus increasing the difficulties of the narcotic situation in our own country. Cannabis, in Louisiana, is covered by a special act, but Dr. Simon was unable to find any case in which the law had been enforced. It is usually imported from Mexico, where it is known as "marajuana"; but in Louisiana it is sold as "muggles," "moota" and "bombalachi." Thousands of young men and young women in Louisiana smoke cigarets of which cannabis is the active base. Dr. Simon believes that the growth of the plant is a menace, and he recommends that special attention be given to checking the increasing use of the drug.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Dr. Riley H. Guthrie has resigned from the staff of the state hospital for nervous diseases and has gone to Walnut Ridge to engage in private practice.——Dr. Arthur D. Gillum, Rover, has been elected a member of the Yell County Board of Education.

Better Milk for Jonesboro.—At a special session, August 19, the city council of Jonesboro passed an ordinance regulating the sale of milk in that city. All milk now must be the product of tuberculin-tested cows and must be frequently inspected by the health officer; the dairyman's name must appear on the caps of all bottles and on the wagon in which the milk is delivered, and the number of bacteria per cubic centimeter must not be more than a specified number. All persons selling milk must be licensed. The penalty for violation of the ordinance is a fine and revocation of the license. The council has attempted thus to safeguard the milk supply of Jonesboro for years, but the measure was opposed; a recent outbreak of typhoid fever demonstrated its necessity.

CALIFORNIA

Personal.—Dr. George M. Webster has been appointed superintendent of the Southern California State Hospital, Patton, to succeed the late Dr. John A. Reily.

License Revoked.—At the July meeting of the state board of medical examiners, San Francisco, the California license of Dr. Frank C. Hart of Portland, Ore., was revoked. Dr. Hart, it is reported, is now serving a sentence in Leavenworth penitentiary for violation of the Mann act.

Alfred Bach Sentenced to Road Gang.—Alfred Bach of Riverside pleaded guilty to practicing medicine without a license in connection with his sanatorium, it is reported, and was sentenced, July 23, to six months in the Riverside County road camp. Bach is said to have held himself out as a doctor of medicine and to have used the prefix "Dr." on some of his business cards.

Physician Arrested for Practicing Chiropractic.—Dr. Clarence D. Crutcher was tried in the justice's court at Indio recently on a charge of practicing chiropractic without a chiropractic license. He was found not guilty by the court. The complaint was made by an investigator of the chiropractic board of examiners who, it is reported, claimed that Dr. Crutcher had given chiropractic adjustments but had not advertised as a chiropractor.

COLORADO

Hospital News.—Beth-El Hospital, Colorado Springs, announces the opening of a $225,000 wing.——The Fort Collins Hospital, which has been operating for twenty years, was permanently closed in June.

National Methodist Sanatorium.—The first unit of the National Methodist Sanatorium at Colorado Springs has been opened to patients; the official opening will take place, November 9. When completed, this institution will have a capacity of 500 beds for tuberculosis patients and will cost $2,000,000. The first unit which has a capacity of fifty-two beds is almost entirely concrete and glass, four stories high with roof-garden and basement; there are six porches on each floor and 635 steel-sash windows in the building.

CONNECTICUT

Clinical Congress of State Society.—The papers to be presented at the second clinical congress of the Connecticut State Medical Society will be abstracted, printed and bound and a copy sent to each member of the Congress. The meetings will be held in Sprague Memorial Hall on the campus of Yale University. Meals will be served at the university dining hall, and luncheon will be provided for members of the congress without extra charge, and rooms in one of the dormitories which has been assigned for this purpose may be had for $1.50 a night. The program has already been noted in THE JOURNAL, June 19 and August 7. Any physician in good standing is invited to be a member and one has already registered from Sacramento, Calif. The fee for the Congress is $10; inquiries should be addressed to Dr. Creighton Barker, 129 Whitney Avenue, New Haven, Conn.

DISTRICT OF COLUMBIA

Personal.—Dr. Ales Hrdlicka of the Smithsonian Institution left Nome, August 20, en route to Washington, following an effort to determine the origin of the North American Indians.

ILLINOIS

Illegal Practitioner Sentenced.—John Boone, Mount Carmel, was sentenced to six months on the state penal farm about August 28, it is reported, following a plea of guilty to a charge of practicing medicine without a license.

Personal.—Dr. Earl B. Miller, Fort Lyon, Colo., has been selected as superintendent of the McDonough County Tuberculosis Sanatorium.——Dr. Isaac D. Rawlings, state health commissioner, addressed the St. Clair County Medical Society, East St. Louis, September 2, on "Preventive Medicine."

Outbreak of Food Poisoning.—At the annual picnic of the Peoria Christian Endeavor Societies, September 2, about 200 persons were stricken with food poisoning, it is reported, and about forty of them were seriously ill. A preliminary report stated that "meat loaf" prepared for the picnic caused the outbreak; an investigation is under way to determine the cause.

Society News.—The Vermilion County Medical Society held an open meeting, September 7, at Danville, which was addressed by Dr. Hiram E. Ross on "Cooperation of the Medical Profession and the Public for Better Community Health"; Dr. Frederick A. Baumgart, "Elementary Physiology"; Dr. William C. Dixon, "Milk"; Dr. Elmer B. Coolley, "Conquering Diphtheria," and Dr. Edwin C. G. Williams, "The Fly Pest."

Chicago

Klemens Ramashauskas Charged with Manslaughter.—A coroner's jury held Klemens S. Ramashauskas to the grand jury on the charge of manslaughter, September 6, it is reported, following the death of a 12 year old boy, for whom he is said to have prescribed carbolic acid for a wound due to the discharge of a blank cartridge; the boy died of tetanus, September 4. Ramashauskas is reported to have testified before the jury that he had been arrested forty-five times for violations of the pharmacy act, but had been released in each instance.

INDIANA

Society News.—The Lake County Medical Society held its annual picnic at the Woodmar Country Club near Hessville; at the banquet in the evening there was an exhibition of moving pictures selected for the occasion.

Personal.—Dr. Chester N. Frazier, Bluffton, who is on a year's leave of absence from Peking Union Medical College, Peking, China, has accepted a position for the winter at Johns Hopkins University Medical School, Baltimore, it is reported; Dr. Frazier probably will return to Peking following his leave.

Hospital News.—Sunnyside Sanatorium, Oaklandon, near Indianapolis, is constructing a medical unit, an additional infirmary building and a nurses' home, and is remodeling the present infirmary building, all of which will cost about $350,000.——The Southern Indiana Hospital, Evansville, will soon undertake the construction of a $250,000 addition.——The Delphi Hospital, Delphi, has been turned over for the use of the Improved Order of Red Men, it is reported.

Dr. Doeppers Appointed Superintendent of Hospital.—Mayor Duvall appointed Dr. William A. Doeppers superintendent of the city hospital, Indianapolis, August 30, to succeed Dr. Cleon A. Nafe, resigned. Dr. Doeppers is said to be a member of the judicial council of the Indianapolis Medical Society and was for three years the secretary; he is also treasurer of the Indiana State Medical Association, a deputy county coroner, and during the World War served overseas with Base Hospital no. 1.

Indiana University Medical Center.—The Provost of Indiana University stated in reply to an inquiry that during the ensuing eighteen months new construction and equipment at the Indiana University Medical Center in Indianapolis will include a $250,000 convalescent home contributed by the Rotary Clubs of Indiana; a $150,000 annex to the James Whitcomb Riley Hospital for Children, contributed by the Kiwanis Clubs of Indiana, and the construction and equipment of a $500,000 nurses' home and school, which sum was donated by the Ball Brothers of Muncie; the remainder of the $1,800,000 recently contributed to the hospital will be used to pay some indebtedness on the original construction and for an endowment fund; when completed, the Riley Hospital will have cost about $3,000,000. There is being constructed now the William H. Coleman Hospital for Women, which will cost $350,000; this sum was donated by William H. Coleman and wife of Indianapolis. Next season, a $150,000 addition to the University of Indiana School of Medicine will be constructed.

IOWA

University News.—The new $800,000 four story medical laboratory at the University of Iowa, Iowa City, will be completed and equipped for use in October.

Health at Des Moines.—Telegraphic reports to the U. S. Department of Commerce from sixty-five cities with a total population of about 29,000,000 for the week ending August 28 indicate that the lowest death rate (5.7) was for Des Moines, and that the death rate for the group of cities as a whole was 10.2. The death rate for Des Moines for the corresponding week last year was 8.5, and for the group of cities as a whole, 10.5.

Bulletin on Disease Prevention.—The state board of health has issued a bulletin covering the first six months of this year on disease prevention, in which it appears that heart disease, cancer, cerebral hemorrhage, pneumonia, nephritis and tuberculosis, in the order named, caused the greatest number of fatalities in Iowa. Dr. Don M. Griswold, then state health commissioner, has pointed out that a similar list made fifty years ago would reveal that the most fatal diseases then are those which are now classed as preventable. The bulletin urges that a greater effort be made in the prevention of diseases which now head the list, and suggests as a means to that end the periodic health examination of apparently healthy persons.

KENTUCKY

Personal.—Mrs. Mary Breckinridge, Lexington, won first place and a prize of $250 in the first Harmon-Survey Quarterly Award, for a paper on "An Adventure in Midwifery"; Mrs. Breckinridge is director of the Kentucky Committee for Mothers and Babies.——Dr. Garland W. Hill, Bardstown, has departed with his family for Tacoma, Wash., where he has accepted a position on the staff of the veterans' hospital.

Society News.—The Barren County Medical Society held a joint meeting with the Third District Medical Society, August 25, at Mammoth Cave; teaching clinics were conducted by Dr. John Rowan Morrison, Dr. James W. Bruce and Dr. Emmett F. Horine, all of Louisville. There were addresses, and a trip to parts of Mammoth Cave by the physicians and their families.

MICHIGAN

Hospital News.—The Battle Creek Sanitarium, Battle Creek, has concluded plans for a new eleven story structure to be erected south of the present sanatorium building.

Personal.—Dr. Horatio A. Brown won the golf championship and cup at the recent annual tournament of the Jackson County Medical Society, Jackson; hereafter a similar prize will be offered annually on this occasion.

Society News.—Dr. B. Weill-Hallé, who has been associated with Dr. Calmette in tuberculosis work in Paris, will speak in Detroit in September under the auspices of the Tuberculosis Society of Detroit and Wayne County.——The county medical societies of St. Joseph, Hillsdale and Branch held a dinner recently at the Coldwater County Club at which Dr. Robert L. Wade, president of the Branch County Medical Society, presided; Dr. Elmer L. Eggleston, Battle Creek, spoke on "Periodic Examinations of Apparently Healthy Persons."

MINNESOTA

Personal.—New fellows reported at the Mayo Foundation as of July 19 include Dr. Robert S. Steel, Sydney, Australia, Dr. Notery A. Gleason, Detroit, and Dr. Walter P. Sherrill, Temple, Texas.

Hospital News.—The Clearwater Hospital, Bagley, was recently destroyed by fire.——About 5,000 persons attended the recent opening and dedication of the new $750,000 Midway Hospital in St. Paul, which will be conducted under the auspices of the Northwestern Baptist Hospital Association; the building is in the form of a Y.

Rural Clinics for Children.—Free clinics for children up to 16 years of age were held in Red Lake County the latter part of August at Oklee, Brooks, Plummer and Red Lake Falls. The clinics were in charge of Dr. Lawrence F. Richdorf, Minneapolis; the expenses were met from funds provided by the sale of Christmas seals.

Society News.—Clinics operated under the auspices of the Hennepin County Medical Society, in conjunction with the city health department of Minneapolis up to August 17, had immunized without charge more than 1,300 persons against diphtheria and scarlet fever.——The next annual meeting of the Southern Minnesota Medical Association will be held, October 18, at Mankato.

MISSISSIPPI

Personal.—Dr. Lerhue Stevens has arrived in Clinton to take up his work as physician to the Mississippi College; Dr. Stevens was formerly on duty at the East Louisiana State Hospital at Jackson.——Dr. Solomon R. Boykin, Jackson, has been appointed superintendent of the Mississippi State Charity Hospital, Jackson, to succeed Dr. David W. Walley.

Society News.—Dr. James B. Black, Jr., Jackson, addressed the Central Medical Society, July 20, on "Pellegra," and Dr. Frank Hagaman, Jackson, on "Disabilities of the Hip Joint."——The De Soto Medical Society held a joint meeting with the Parent Teachers Association of Hernando, September 6; Dr. Lancelot L. Minor spoke on "The Necessity of Physical Examination at Stated Periods."——An organization meeting was held in Meridian, July 20, whereby the medical societies of Newton, Neshoba, Winston and Lauderdale united to form the "East Mississippi Medical Society," for which a new charter will be requested at the next state medical meeting. Dr. Matthew J. L. Hoye was elected temporary president, and Dr. Hubert L. Rush, temporary secretary-treasurer.——The president of the state medical association, Dr. Theophilus E. Ross, recently visited the meetings of the Central Medical and the North Mississippi Six Counties Medical Society.

NEBRASKA

Hospital News.—The St. Luke's Hospital, Kearney, which has been in existence fifteen years, announced that it would receive no patients after June 11, and that it would close as soon as the patients were able to leave the hospital.

Personal.—Dr. Thomas J. Lawson, Ainsworth, is a candidate for reelection to the state legislature.——Dr. Paul F.

Siman, Winside, has been appointed professor of anatomy, University of Arkansas, according to the *Nebraska State Medical Journal.*

Society News.—The Elkhorn Valley Medical Society convened at Norfolk, August 2, and spent the morning at golf; there was a business session in the afternoon, and clinics were held at the Lutheran Hospital at which were shown cases of Banti's disease, carcinoma of the bladder, and a case of brain abscess which occurred months after a mastoidectomy. At the Norfolk State Hospital, about fifteen cases were presented to illustrate the newer methods of treating dementia praecox and general paralysis; after the banquet in the evening, Dr. John Buis, Pender, read a paper on "Rupture of the Spleen with Report of Cases"; Dr. Henry Dey Myers, Howells, "Treatment of Pertussis, with Especial Reference to Vaccine"; Dr. Dexter D. King, York, "Periodic Health Examinations," and Dr. Francis A. Long, Madison, "Economic Problems of Medicine." At the business session, Dr. Ernest W. Powell, Omaha, was reelected president; Drs. John Buis, Pender, and Claude L. Wills, Madison, vice presidents, and Dr. Edward L. Brush, Norfolk, secretary-treasurer; the meeting was considered a "great success."—— The Madison, Stanton, Pierce and Antelope Counties Medical Society met at Tilden, August 11; forty-eight persons were present at the dinner preceding the scientific program. Dr. John Clyde Moore, Omaha, addressed the society on "The Diarrheas of Children," and Dr. Charles R. Kennedy, Omaha, on "Urology," illustrated with lantern slides.

NEW HAMPSHIRE

Fourth Health Institute.—The fourth New England Health Institute will be held at Concord, September 27-October 1, having been postponed from May 24-28. The advances in medicine and hygiene and new methods of demonstrating the value of preventive medicine to the public will be discussed.

University News.—A $225,000 hospital is being constructed at Dartmouth Medical School, the gift of Mr. and Mrs. E. K. Hall, New York, in memory of their son; it will have a capacity of forty beds, and be connected with the Mary Hitchcock Memorial Hospital, and be known as "Dick Hall's House." The medical staffs will be the same as those for the Mary Hitchcock Memorial Hospital.——Dr. Axel M. Hjort has been appointed a professor of pharmacology on the faculty of Dartmouth Medical School. Dr. Hjort, a graduate of the University of Illinois, received his M.D. and Ph.D. degrees from Yale University, where he taught pharmacology for five years; more recently he has been engaged in research for Parke, Davis & Company.

NEW JERSEY

Hospital Orderly Prescribes.—Harold P. Palmer, Trenton, said to be a former orderly at McKinley Hospital, was held to the grand jury under bail, August 12, on a charge of practicing medicine without a license. Palmer, it is reported, wrote a prescription for Philip Padgnato.

Varieties of Health Officers.—The Department of Health of the State of New Jersey in its monthly bulletin publishes a list of the health officers in municipalities of New Jersey of more than 10,000 population. There are fifty-two names on the list, some designated as town physician, city health inspector, sanitary inspector and health inspector; sixteen of the health officers are doctors of medicine; three are veterinarians, one a registered nurse, one a Ph.D., and among the others are names of men and women who appear to have no professional degree.

NEW YORK

Outbreak of Infantile Paralysis.—The death from infantile paralysis of an 8 year old boy at Glenwood Landing occurred, August 29; nine other cases occurred within five days, it is reported, in a radius of three miles.

Dr. Baker Appointed Psychiatrist at Sing Sing.—Dr. Amos T. Baker, for the last five years medical superintendent of the New York State Reformatory for Women, Bedford Hills, has accepted an appointment as psychiatrist for the state prison at Sing Sing.

Apolonia Karpinski's License Revoked.—The state department of health announces that the license of Apolonia Karpinski of Yonkers to practice midwifery has been revoked. Mrs. Karpinski was suspended from the practice of midwifery in 1921-1922 for violation of the laws, was reinstated on recommendation of the local health department, and was recently reported by that department for using instruments at deliveries.

Personal.—Dr. Charles Davis has been appointed superintendent of the Cattaraugus County Tuberculosis Hospital, Machias.——Dr. Samuel J. Post has succeeded Dr. John P. Ruppe as superintendent of the Columbia County Tuberculosis Sanatorium, Philmont.——Dr. James C. Walsh recently assumed the duties of superintendent of the Jefferson County Sanatorium, Watertown.——Dr. Albert M. Rooker, Niagara Falls, was recently elected president of the New York Association of Superintendents and Managers of Tuberculosis Sanatoriums, and Dr. Reuben Wilson Shelley, Niagara Falls, secretary.——Dr. Sara E. Foulks, Burlington, N. J., has been temporarily appointed obstetrician for the division of maternity, infancy and child hygiene, New York State Department of Health; Dr. Foulks, for the last three years, has been director of the American Women's Hospitals work in Greece.

New York City

Hospital News.—The Brooklyn State Hospital, Brooklyn, is trying out in that institution the treatment of general paralysis and tabes by inoculation with malarial organisms; the work is under the supervision of Dr. John L. Macumber.

Automobile Licenses Revoked.—The state commissioner of motor vehicles has announced that 216 automobile licenses in New York City had been suspended the first ten days of August and thirty-six had been revoked, the majority of them being for driving cars while intoxicated. The New York *Times* publishes the names and addresses of those persons whose licenses were revoked for driving while intoxicated.

Epidemic Among Fowls.—Thousands of chickens shipped from some Western states to New York have been ordered killed by the city health commissioner on account of an outbreak of diphtheritic roup, it is reported; other steps will be taken to prevent all diseased poultry from reaching the public. A board of veterinarians and laymen appointed to make an investigation is said to have found in one car 600 dead chickens, in another 313, in another 75 and in another 100, and in addition hundreds of chickens that were sick with this disease.

Milk "Czar" to Be Appointed.—Following a conference of the health commissioner and officers of the Milk Chamber of Commerce, September 8, the latter decided, it is reported, to appoint a supreme arbiter in the milk industry whose work will be similar to that of the so-called czars in baseball and the moving picture industry. The Milk Chamber of Commerce, which is an organization of independent milk dealers in New York, has shown its desire to clear up the milk situation, and has ordered the discharge of all men previously associated with Harry Danziger, the first man to be indicted in the milk graft inquiry.

Temperature in Pasteurization of Milk.—In 1914, the pasteurization of milk in New York except that termed "certified," was made obligatory by law. A decline in the nonpulmonary tuberculosis death rates has occurred since this law became effective. The bulletin of the city health department states that in 1911 there were 1,460 deaths from nonpulmonary tuberculosis, and in 1925 only 699. Previous to the pasteurization of milk, more than 50 per cent of the tuberculous glands of the neck investigated were due to the bovine bacillus; since pasteurization became general, only in six out of fifty specimens obtained has the bovine bacillus been found, and five of these patients were from out of town and had been fed on raw milk. The health authorities are considering the subject of pasteurization in view of the recent action of the Conference of State and Provincial Health Authorities of North America, which agreed on a temperature of 145 F. maintained for thirty minutes. The requirement in New York is 142 F., and the commercial interests are protesting against a higher standard, which, they say, will require the installation of new equipment and increase the cost of milk. The health commissioner will make a decision after consideration of opposing views and conferences with persons qualified to give counsel.

NORTH CAROLINA

Personal.—Dr. James R. Alexander, Charlotte, has been elected president of the North Carolina Hospital Association.

Hospital News.—The county commissioners of Forsythe County have purchased a 48 acre tract about 2 miles from Winston-Salem; measures will be taken to erect there a county tuberculosis hospital.

Dr. Wright Appointed to State Board of Health.—The governor has appointed Dr. John B. Wright, Raleigh, a mem-

ber of the state board of health to succeed the late Dr. Richard H. Lewis; Dr. Wright who was the partner of Dr. Lewis for many years, held the first "throat clinic" conducted under the auspices of the state boards of health and education.

Warning—Riding on Rear of Automobiles.—The state board of health has issued a warning about the danger of being overcome by gases while riding on the rear of automobiles. A recent nearly fatal accident of this kind occurred to a young boy who was overcome while riding on the rear of a truck. The car in moving is said to produce a "vacuum" into which is drawn the exhaust gases, among which is carbon monoxide. The state board says that the exhaust on U. S. Army ambulances has been changed from the rear to the side of the ambulance for this reason.

NORTH DAKOTA

Reappointments to State Board.—Drs. Henry M. Waldren, Drayton, Henry H. Healy, Grand Forks, and Murdock MacGregor, Fargo, were reappointed by the governor, August 21, as members of the state medical board for three years.

OHIO

Society News.—Eighty-six physicians took the second postgraduate course of the Academy of Medicine of Toledo and Lucas County; Prof. Frank N. Wilson, professor of internal medicine, the University of Michigan Medical School, Ann Arbor, conducted a series of lectures on the heart.

Promotions and Appointments at Western Reserve University.—The following promotions and appointments to the faculty of Western Reserve University Medical School have been announced in the *Bulletin* of the Academy of Medicine of Cleveland:

PROMOTIONS

Dr. Roy W. Scott, associate professor of medicine for five years.
Dr. Marion A. Blankenhorn, associate professor of medicine for five years.
Dr. William B. Chamberlain, associate clinical professor of otolaryngology for five years.
George B. Ray, Ph.D., assistant professor of physiology for three years.
Dr. David Rapport, assistant professor of physiology for three years.
Dr. Maxwell Harvin, assistant professor of orthopedic surgery for three years.
Dr. Otto Saphir, senior instructor in pathology for three years.
Dr. James D. Pilcher, senior instructor in pediatrics for two years.
Dr. Abram B. Bruner, senior clinical instructor in ophthalmology for two years.
S. W. Chase, Ph.D., assistant professor of histology and embryology for three years.
Dr. Carl Krenz, instructor in pathology for two years.
Dr. John A. S. Gammel, instructor in dermatology and syphilology for two years.
Dr. John Rauschkolb, instructor in dermatology and syphilology for two years.
Dr. Norman C. Wetzel, instructor in pediatrics for two years.
Dr. Arthur C. J. Brickel, clinical instructor in anatomy for two years.
Dr. Herbert L. Koeckert, instructor in clinical pathology for two years.
D. Spencer A. Wahl, clinical instructor in pediatrics for two years.
Dr. Joseph E. McClelland, clinical instructor in pediatrics for two years.
Dr. Edwin P. Kennedy, clinical instructor in obstetrics for two years.
Dr. James L. Reycraft, clinical instructor in gynecology for two years.

APPOINTMENTS

Dr. John H. Davis, clinical instructor in pediatrics for two years.
Dr. Clyde L. Cummer, demonstrator in dermatology and syphilology for one year.
Dr. Robert B. Hauver, demonstrator of pediatrics for one year.
Dr. Julius W. McCall, demonstrator of otolaryngology for one year.
Dr. Clarence H. Heyman, demonstrator of orthopedic surgery for one year.
Dr. Robert S. Young, demonstrator of genito-urinary surgery for one year.
Benjamin Freeman, Ph.D., instructor in biochemistry for one year.
Dr. John W. Holloway, Crile Fellow in surgery for one year.
Dr. David M. Cox, demonstrator of gynecology for one year.
Dr. Alwyn E. Bennett, demonstrator of obstetrics for one year.
Dr. William C. McCally, demonstrator of histology and embryology for one year.
Dr. Herbert S. Reichle, fellow in pediatrics for one year.
Dr. Joyce I. Hartman, fellow in pediatrics for one year.
Dr. Hope Sherman, fellow in pediatrics for one year.

OKLAHOMA

Personal.—Dr. Alexander H. Stewart has been appointed city health officer of Lawton, to succeed Dr. Charlie P. Hues, resigned.——Dr. Ernest E. Nunnery, Miami, is now on duty at the U. S. Bureau of Mines clinic at Picher.

Society News.—The Oklahoma State Medical Association, at its recent annual meeting in Oklahoma City, appointed a committee on "contract and industrial practice" for the purpose of research and study of all features of the subject, and to make a complete report at the next annual meeting.

RHODE ISLAND

Death Rate in 1925.—The death rate in Rhode Island in 1925, according to the U. S. Department of Commerce, was 12.11 per thousand of population, as compared with 12.48 in 1924. The principal decreases in death rates were from scarlet fever, suicide, and diseases of the intestinal tract.

SOUTH DAKOTA

Society News.—Mrs. Robert L. Murdy, Aberdeen, was elected president of the Women's Auxiliary of the state medical association at the annual meeting in May.

Personal.—Dr. Thomas F. Ballard, director, Yankton County Health Department, has become city health officer of Aberdeen.——Dr. Benjamin W. Black, formerly with the Veterans' Bureau at Salt Lake City, has been appointed medical director of the Veterans' Bureau at Sioux Falls.

State Society Recommends Course in Hygiene.—At its last annual meeting, the South Dakota Medical Association adopted resolutions to be presented to the state board of regents, requesting them to add a definite and uniform course in health and hygiene to the curriculums of all teacher training schools of the state which do not now have such a course.

TENNESSEE

Typhoid Outbreak.—The city health officer, Nashville, is reported as stating, August 28, that the typhoid epidemic showed no signs of abatement, and that the total number of cases in that city this year was 103, and the deaths from typhoid fifteen.

Society News.—Dr. John A. McCulloch, Maryville, was host at a melon feast to the Blount County Medical Society, at his home, August 19; plans were made for the meeting of the East Tennessee Medical Association, Maryville, October 12 and 13, which the Blount County society will entertain; Dr. Granville D. Lequire then addressed the society on "Mercury, Its Uses and Abuses."

TEXAS

Personal.—Dr. Richard McCormick, Waco, has been reappointed county health officer for two years.——Dr. Alfred L. Ridings has been appointed city health officer of Sherman to succeed the late Dr. James A. Swafford.——Dr. Herschel F. Connally has been elected mayor of Waco.

VERMONT

Increase in Mortality.—The death rate for Vermont in the year 1925, according to the U. S. Department of Commerce, was 14.58 per thousand of population, as compared with 13.79 in 1924. The increase is accounted for largely by increased death rates for heart disease, influenza, nephritis and cancer. The death rates in 1925 in Vermont from tuberculosis, pneumonia and whooping cough decreased; there were no deaths reported from measles.

Experiment in Reducing Cost of Nursing.—The trustees of the trust established under the will of Thomas Thompson of New York are making an experiment, it is reported, whereby people of moderate means in the vicinity of Brattleboro may receive nursing at home at half the regular price. It is planned to obtain 500 members among whom each single person will pay $2, each married couple $3, and each child 50 cents to the association and thereby be entitled to graduate nurses during illness at home, or to mutual aid association nurses at half the usual charge.

VIRGINIA

Society News.—The Tri-County Medical Society—Warren, Rappahannock and Page—met at Front Royal, August 17, under the presidency of Dr. Lyle F. Hansbrough. The program was devoted to a discussion of typhoid fever by Dr. Ernest L. Grubbs, Front Royal; Dr. David M. Kipps, Front Royal; Dr. Edgar R. Browning, Flint Hill, and Dr. Philip W. Boyd, Winchester.

Hospital News.—The Winchester Memorial Hospital, Winchester, is constructing an addition which will make the total capacity of the institution 109 beds; it will be completed about Jan. 1, 1927.——The new Pulaski Hospital, Pulaski, was formally opened, recently.——The Hughes Memorial Hospital, Danville, was recently opened to the public; it has a capacity of 100 beds.——The Rockingham Hospital, Harrisonburg, is to construct a new addition.

Distribution of Silver Nitrate by the State.—The state bureau of vital statistics has issued a warning concerning

the use of solutions of silver nitrate in new-born babies' eyes. The bureau is entrusted by the state with the free distribution of a 1 per cent solution in wax ampules, and since this law was enacted in 1918, a very small number of cases of ophthalmia neonatorum has been reported; it is admitted, however, that complete reports are not available. Attention is called to an instance in which a silver nitrate solution, prepared by a druggist, on examination was found to be a 10 per cent solution instead of a 1 per cent solution; it resulted in a severe case of conjunctivitis, with corneal ulcer. Physicians and midwives are requested to report cases of ophthalmia neonatorum to the state board of health and to use the solution distributed by the bureau of vital statistics, for which the state is responsible.

WYOMING

Personal.—Dr. Wilber K. Mylar, Cheyenne, has filed his petition as candidate for secretary of state.

Decrease in Mortality.—The death rate in Wyoming in 1925, the Department of Commerce states, was 8.27 per thousand of population, as compared with 9.51 in the previous year. Among the decreased rates last year was that for measles, which caused no deaths in the state, but which in 1924 caused a mortality rate of 0.19 per thousand of population.

GENERAL

Hair Tonics and Dyes.—In a report issued August 29, the U. S. Department of Commerce placed the value of hair tonics produced in 1925 in this country at $9,480,000, and the value of hair dyes produced at $1,616,000.

Synthetic Camphor.—There was developed during the World War a method whereby camphor could be obtained from turpentine; trial shipments of this camphor reached the United States after the war. The U. S. vice consul at Berlin reports now that the monthly shipments of this product from Germany to the United States increased from $78,000 in January of this year to $286,000 in April; only American turpentine is used in its manufacture, the turpentine from Poland and Russia not proving satisfactory. So far its use has been limited to the larger users, such as the manufacturers of pyroxylin plastics.

Society News.—At the annual convention of the American Dietetic Association, Atlantic City, N. J., October 11-13, Dr. John J. R. Mcleod, of the University of Toronto, and Julius Stieglitz, Ph.D., professor of chemistry, University of Chicago, among others, will speak; among the subjects for discussion will be advancement in the basic sciences; our present knowledge of rickets; teeth and diet; temperament problems in relation to food, and diabetes in children.——Dr. Florestin Aguila, Madrid, Spain, was elected president of the International Dental Federation at the seventh congress in Philadelphia in August; Drs. William Guy, Edinburgh, Maurice Roy, Paris, Herbert L. Wheeler, New York, F. S. Stuckert, Frankfort-on-the-Main, and William H. G. Logan, Chicago, vice presidents; Dr. George Villain, Paris, secretary-general, and Dr. A. J. Van Hasselt, the Hague, treasurer.

Influenza Epidemics.—The U. S. Public Health Service considers that the outbreak of influenza in the winter and spring of 1926 would have been regarded as a calamity were it not for the pandemic of 1918, which caused more than 500,000 deaths in the United States, and the epidemic of 1920, which caused about 100,000 deaths in this country. The three epidemics were similar in some epidemiologic respects. It is too early for accurate figures on the 1926 outbreak, but the annual death rate in large cities of the United States from December 27 to May 28 for all causes rose to 19.4 per thousand in the week of March 21-27, which was 31 per cent higher than the rate for the corresponding week of 1925. The three epidemics spread over the entire country in comparatively short periods of about the same length and within that period they were generally similar with respect to their course from the point of view of time. The incidence of 1926 influenza cases was similar to that of 1918 in the age period 5-9, but was higher in the ages 35 years and over.

American Academy of Ophthalmology and Otolaryngology.—The thirty-first annual meeting of this society will be held at Antlers Hotel, Colorado Springs, Colo., September 13-18, under the presidency of Dr. Edward C. Ellett, Memphis, Tenn. Tuesday afternoon and Thursday morning will be devoted to ophthalmology; Wednesday afternoon and Thursday afternoon to otolaryngology; a golf tourament has been arranged for Monday; afternoon sessions will close at 4:30. There will be an informal dance Tuesday evening following the business session, and the annual banquet Wednesday evening at the Broadmoor Hotel. Examinations by the boards will be Monday morning at the University of Colorado Medical School in Denver and applicants should communicate with the secretary of the board before which they expect to appear; Dr. William H. Wilder, 122 South Michigan Boulevard, Chicago, is secretary of the American Board for Ophthalmic Examinations, and Dr. Hanau W. Loeb, 1402 South Grand Boulevard, St. Louis, secretary of the American Board of Otolaryngology. A special scientific session Monday evening will be addressed by Prof. Robert H. Gault, Ph.D., Washington, D. C., whose subject will be "Hearing Through the Skin," illustrated by lantern slides. The guest of honor will be Mr. Basil Graves, London, England, who will address a joint session, Wednesday morning, on "Some Suggestions Concerning Cataract Extraction"; Dr. Gerald B. Webb, Colorado Springs, has also been invited to address this session on "Serum Diagnosis and Specific Treatment of Tuberculosis."

Bequests and Donations.—The following bequests and donations have been announced recently:

The Mercer Hospital and the St. Francis Hospital, each $15,000, and the McKinley Hospital, $10,000, all of Trenton, N. J., by the will of the late Col. Washington A. Roebling, builder of the Brooklyn Bridge.

The Lowell General Hospital, Lowell, Mass., more than $700,000 from the estate of the late Freeman B. Shedd of Lowell.

The Lewistown Hospital, Lewistown, Pa., $5,000 by the will of the late Mary Turner McCullough.

The German Society of Pennsylvania, $5,000 for a free bed in the Lankenau Hospital, Philadelphia.

The Maine General Hospital, $50,000 to be known as the Stanley T. Pullen Fund, and the Maine Institute for the Blind, $2,000 by the will of the late Mrs. Elizabeth Pullen.

The Oregon State Tuberculosis Hospital, Salem, $5,000, by the will of the late Chester D. Edwards, Eugene.

The Children's Aid Society, $10,000 and St. Luke's Hospital, New York, $5,000 by the will of Martha W. Low.

The Pennsylvania Hospital and the Shriners Hospital for Crippled Children, Philadelphia, $200 each, by the will of the late Joseph Rosenfeldt.

The Lucien Moss Home for Incurables, Philadelphia, $200, by the will of the late Mollie Belletz.

The New York Skin and Cancer Hospital, Lebanon Hospital, Lennox Hill Hospital, the Montefiore Home Sanatorium for Consumptives, New York Association for the Blind, all of New York, and the Jewish Hospital Association of Cincinnati, each $1,000, by the will of Ida Seasongood.

The Home for Crippled Children, the Home and Hospital for Incurables, the Newark Orphan Asylum, all of Newark, N. J., each $2,000 by the will of Walter M. Ward, Newark.

The Biloxi City Hospital Association, Biloxi, Miss., about $4,300 by the Biloxi Lodge of Elks.

The Caledonian Hospital of the City of New York, will receive about $85,000 from the estate of John A. Kerr on the death of his wife, Fernande Kerr.

The Misericordia Hospital, Philadelphia, $1,000, by the will of John E. Whalen.

The Sacred Heart Hospital, Eau Claire, Wis., a donation of $100,000 for the erection of an addition to be known as the Mary E. Dulaney Memorial.

The University of Chicago, for the purpose of founding a publication in the field of social science, $30,000 from the estate of the late Prof. Albion W. Small.

CANADA

Hospital News.—A prominent business man of Montreal, who, the *Canadian Medical Association Journal* says, wishes to remain anonymous, has given an endowment of $250,000 to the Shriners' Hospital for Crippled Children, Montreal. ——A general dispensary will be established in Verdun, for which twenty-two physicians have volunteered their services; Dr. Richard M. H. Power will be in charge.

Society News.—Dr. David W. Archibald, Sydney Mines, has been elected president of the Cape Breton Branch Medical Society of Nova Scotia, and Dr. William Grant, Wolfville, president of the Valley Branch Medical Society of Nova Scotia.——Dr. Alfred Howard Spohn, Vancouver, has been elected president of the Canada Society for the Study of Diseases of Children; Dr. Henry P. Wright, Montreal, vice president, and Dr. Frederick F. Tisdall, Toronto, secretary-treasurer. The next annual meeting will be at Winnipeg.—— At the annual meeting of the Fraser Valley Medical Society, Dr. George W. Sinclair, New Westminster, was elected president, and Dr. Omar Van Etter, secretary-treasurer; Dr. James Miller, professor of pathology, Queens University Faculty of Medicine, addressed the society on "Cancer Research."

LATIN AMERICA

Personal.—Madam Curie sailed from Rio de Janeiro for her home in France, August 30, after a series of lectures in various cities of Argentina.

New Sanatorium in Mexico.—The Vera Cruz Antituberculosis League recently opened a small sanatorium for tuberculosis patients; the league is conducting also a dispensary,

and a campaign of education by lectures given in patios of tenement houses. The governor of the state assists by appropriating 250 pesos a month for this work.

Prize for Research on Action of Cactus Juice.—The *Revista Mexicana de Biologia* announces that the medical faculty of the University of Mexico City offers a prize for the best work received before April, 1927, dealing with the pharmacology of the mescal and other forms of cactus, of the peyote type. Competition is restricted to Mexican physicians or physicians that have resided in Mexico for three years.

Maternity Center in Chile.—In accordance with the terms of a bequest by the late Señor Victor Pretot Freire, there has been opened a well equipped health center for mothers in Santiago, which will work in cooperation with the Patronato and the school of social service. Advice will be given to expectant mothers, and care during and after childbirth. Midwives will be sent to the home in normal cases of labor; difficult cases will be taken to a hospital.

Costa Rica Items.—The death rate at San Jose in 1925 was 22.1 per thousand and the birth rate, 44.1 per thousand.——The Punta Arenas Hospital will soon open two new buildings, one for contagious diseases, the other for administrative offices.——A Better Baby Show was recently conducted in San Jose; prizes were offered for the healthiest child in each of three age groups from three months to five years.——The board of health of San Jose has decided to establish an institute of child welfare to conduct demonstrations and lectures in the care of children and to gather statistics on child welfare.

FOREIGN

Centenary of Brehmer.—It is just a hundred years since the birth of Hermann Brehmer, whose graduation thesis proclaimed the idea, "Pulmonary Tuberculosis is Curable"; his sanatorium at Görbersdorf was the pioneer and long the model for the world.

Plague Follows Earthquake.—Four cases of bubonic plague and two deaths were reported at Horta in the Azores, September 3, following the earthquake of the previous week. The general sanitary situation, however, was considered satisfactory. According to the press report, the governor of the island is a physician.

Adenoid Institute at Rome.—The *Policlinico* states that the authorities are organizing an institute to be exclusively devoted to removal of adenoids and postoperative treatment. There will be provisions for fifty beds, and arrangements for collective or individual postoperative inhalation treatment, utilizing a spray of calcium solution or the Salsomaggiore mineral waters, or other measures as indicated.

Medical Journal in Esperanto.—The *Internacia Medicina Revuo*, the editor-in-chief of which is Prof. J. Vanverts of Lille, is said to be now appearing regularly, with collaborators and subscribers in all parts of the world. Besides discussions of international scope, it publishes abstracts and reviews of medical literature. Sample copies will be sent on request by Dr. Briquet, rue de la Bassée, 31, Lille, France.

Prize for Research in Ophthalmology.—The *Riforma medica* states that the R. Clinica Oculistica, Rome, is the headquarters of the Italian Ophthalmologic Society, to which articles are to be sent in competition for the international Cirincione prize. A gold medal and 20,000 liras are offered for the best original work composed in 1926 on the eye and its diseases. All persons over the age of 45 are excluded from competition, as also all regular professors. Of the six other prizes offered by the society, two will be awarded for the best works on trachoma and histology or embryology presented at the 1926 specialist congress.

British Optical Convention.—The optical convention held recently at the Imperial College of Science, London, was the third of the kind; the previous meetings were in 1905 and 1912. The convention was opened by the prime minister, Mr. Stanley Baldwin. In his presidential address, the astronomer royal of Great Britain, Sir Frank Dyson, reviewed the progress of optical manufacture, and remarked on the contribution of astronomers to the art of optical design. The ophthalmic section of the convention, in which alone there were more than thirty exhibits, was visited by more than 8,000 persons. About 100 technical papers were read at the meeting by leading British authorities in various branches of optics. The proceedings of the convention are available for 30 shillings and 9 pence, including postage; they contain verbatim reports of the papers and discussions. Thomas Martin, 1 Lowther Gardens, Exhibition Road, London, S. W. 7, is the secretary.

Personal.—The *Bruxelles médical* mentions that the queen of Belgium recently officiated as godmother to the seventh daughter of Dr. G. Debaisieux, professor of surgery at Louvain.——Dr. H. Matagne, Brussels, was recently awarded the gold medal of the Carnegie Hero Fund.——Dr. E. Alfieri, professor of gynecology at the University of Pavia, has been instrumental in the organization of a consulting dispensary at Milan, for advice to those contemplating matrimony.——Prof. J. E. Johansson presided at the recent International Physiology Congress at Stockholm in August, at which 600 registered. The opening address was by Prof. Gowland Hopkins on "The Mechanisms of Biologic Oxidation."——Dr. Karl Henschen, professor of surgery at the University of Zurich, has been appointed successor to the late Prof. G. Hotz, at the University of Basel.——Dr. A. del Campo, of the editorial staff of the *Revista Médica* of Malaga, has been awarded a Rockefeller fellowship for study of epidemiology and left in August for New York.

Deaths in Other Countries

John G. Adami, vice chancellor of Liverpool University, former professor of pathology and bacteriology, McGill University Faculty of Medicine, Montreal, co-author of a "Textbook of Pathology" and "Principles of Pathology," and other books, August 29, aged 64.

Government Services

New Officers in Charge of Marine Hospitals

The U. S. Public Health Service has issued orders directing the following officers to assume charge of the U. S. marine hospital indicated:

Surg. John W. Trask, U. S. M. H. no. 1, Baltimore.
Surg. John T. Burkhalter, U. S. M. H. no. 3, Buffalo.
Surg. Milton H. Foster, U. S. M. H. no. 5, Chicago.
Sr. Surg. Gregorio M. Guiteras, U. S. M. H. no. 10, Key West, Fla.

Medical Personnel for Army of Strength Proposed

In a statement as to the needs of the medical department, the Surgeon General is reported to have said, that for an army of the strength proposed there should be 1,485 medical officers, 297 dental officers, 284 of the veterinary corps, 128 of the medical administrative corps, 10,000 enlisted men, and 700 in the nurse corps. The Surgeon General pointed out, according to the *Military Surgeon*, that the medical department, from the point of view of preparedness for field service, is infinitely worse off now than it was during the prewar period, comparing the demands then made on its personnel with what they are today. The Surgeon General recommended, with regard to the project, an increase of three brigadier generals in the medical department, one each for the medical corps, veterinary corps, and dental corps. For the branches of the service having a single list with respect to promotion, there is one general officer for every 127 officers, while in the medical department, which now has three general officers, with the insufficient increase proposed the ratio would be one general officer to every 554 officers; if the medical department were allowed three additional brigadier generals, the ratio would then be one general officer to every 276 officers of the medical department, a marked contrast to the ratio of 1 to 127, which applies to line and other officers on the single list. The Surgeon General considers that, in promoting the health of the military establishment, the medical department is directly conserving the federal budget, and that it returns to the government a magnificent yield on money spent in its work; he recommends with regard to the enlisted personnel of the medical department, that the same principle of equal opportunity and promotion be established, and that the present disproportion between this department and other technical branches of the army be corrected, so that it may be as attractive to prospective members of the department, as are the ordnance, the finance and the quartermaster departments.

Veterans' Bureau Personals

The U. S. Veterans' Bureau Medical Bulletin notes the resignations of Drs. Frank G. Grace, William P. Katz, Maxim Pollak, Samuel J. Post, William G. Raby and Robert S. Wishard.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 21, 1926.

British Association for the Advancement of Science

THE EVOLUTION OF MODERN MAN

Prof. H. J. Fleure, president of the Anthropology Section, chose for his address "The Regional Balance of Racial Evolution." Modern man, he said, was known first from the northwest quadrant of the Old World, and chiefly from Europe. Several subgroups of modern man in Europe were now recognized as early as the Aurignacian period, implying that modern men had somewhere gone through a long history before they came to Europe with Aurignacian culture. They were not by the evidence forced to assume development from widely different types of ancient man nor were they forced to assume a single ancestral pair or even a small number of ancestral pairs. Considerations of the effect of climate on body and mind suggested that man must have evolved in a region not very different in climate from the existing climate of Europe, but it was possible, according to Olbricht, that as his mental processes were most active at a temperature below that of the greatest comfort physically, the advance to the fully human condition might have been made in one of the later phases of the ice age. If modern men were descendants of one ancestral group, it was probably a group of Pleistocene or mid-Pleistocene date, when the requisite climatic conditions obtained in the belt now forming the Sahara and southwestern Asia. The ancestors of modern men might perhaps be placed in the zone from the Saharan edge of the Atlantic to Persia, not all alike, and with the most active mentally on the northern and colder side of this zone. An advance toward the erect posture was probably characteristic of early modern man, and he was probably more or less brown skinned, dark haired, and dark eyed, living where there was a good deal of summer sunshine. Reduction of jaws and brow bridges from what characterized earlier types could be postulated, making it easier to balance the head on the vertebral column. This reduction was made possible by increased use of the hands. The growing forebrain was capturing energy, and there was probably a reduction of the pituitary secretions and an increase of thyroid secretion, or at least a liberation of it from old duties to new. The variation of characters in early examples of modern man suggested a number of ancestors spread over a fairly large zone. There were, for example, differences in the proportions of the upper to the lower limbs. Even the pigmies might be survivals of a longer armed race with an arboreal stage in its ancestry.

POPULATION AND FOOD SUPPLY

Sir Daniel Hall, president of the Agricultural Section, said that sociological factors were coming into play, and almost bringing back the old problem of Malthus. The capacity of agriculture to provide food for the growing numbers of the people depended on the extent of land available and on the pitch of cultivation. The question was, How far could tuning-up methods compensate for a nonexpanding of acreage? Under the existing conditions of agriculture among Western peoples, it required between 2 and 2½ acres of cultivated land to supply the needs of one unit of population (one man, one woman and one child). The expansion of the white peoples in the last century was unprecedented, and was achieved only because of the vast areas of unoccupied land, chiefly in the Americas, which suddenly had become available for cultivation. No similar increase of good land was to be expected.

A vegetarian diet was more economical of the resources of the soil; meat and all animal products, such as milk and eggs, were produced with an expenditure of energy that might be from seven to twenty times as high as the energy available from them. If the maximum of population supported by a given area of land was to be the objective, vegetarianism and a cessation from the use of alcohol would become necessary. But he could not help feeling that the race (not individuals) which cut out meat and alcohol to multiply would be of the permanent slave type, destined to function like worker bees in the ultimate community. With regard to the intensification of production, the dominating factor was the cost of labor; in the past, the cheaper way had been extending the cultivated area. A certain gain might be achieved by introducing more heavily cropping varieties, but too much was not to be expected from the plant breeder. The present annual increment in the white population was about 5 millions, which would necessitate taking into cultivation 12 million acres of new land every year. No process of that kind was going on; indeed, in many crops the acreage was decreasing, and economic conditions in almost every European county were reducing the numbers of agricultural laborers. To continue to feed the growing population of the world on the present methods, a continued expansion of the cultivated area is required; new land is called for year after year. Land of the necessary quality cannot be found in quantities commensurate with the immediate demand. Doubtless the white races will maintain their rising standard of living and will apply deliberate checks to their fertility—a process already in action. But the restriction of increase will not take effect all at once, even under economic pressure, and the danger lies in the period preceding the comparative stabilization. As it cannot be supposed that the development of the civilized races can be allowed permanently to be checked by lack of food when food is obtainable, it follows that resort must be had to the intensification of production from the area already under cultivation.

HEREDITY

"Heredity in its Physical and Mental Aspects" was the title of a joint discussion by the Zoology, Anthropology and Psychology sections. Dr. C. S. Myers said that heredity had been viewed from two standpoints—the physical and the psychologic. According to the former, definite units of "behavior" existed, and these were separately localizable in different structures within germ cells, much as various mental functions were commonly supposed to be localizable in different regions of the cerebral hemispheres. Adoption of the psychologic standpoint, on the other hand, had resulted in vague and otherwise unsatisfactory analogies being drawn between heredity and memory. Other and more valuable psychologic considerations might be utilized, and the final solution of the nature of heredity lay in a combination of the two standpoints. The physical standpoint must naturally be confined to a purely mechanistic explanation. But that could only be one aspect of the entire truth. What was found in mind must also occur in life. The purely mechanical reflex was rarely a separate entity in the intact organism. So, too, instinct and genius were inseparable (save by abstraction) from intelligence. Orderly, purposeful direction, however rudimentary, was universal in the creation of the new. Because a certain area of the cerebral hemisphere must be intact in order that a certain kind of consciousness might occur, it did not follow that that area was the seat of that kind of consciousness. We were justified only in concluding that a necessary condition for a special kind of consciousness to appear was that the corresponding nervous process must pass through a special area of the cortex. The localization of inherited qualities in chromosomes might have

merely a similar implication. At all events, what was obviously inherited seemed something more akin to mind than to matter; the functioning of the whole and the interrelation between parts, general orderliness and direction seemed at least as important as a narrow material localization. It was in the persistence of those rather than in its identical substance that the "immortality" of the germ plasm consisted. Here entered the difference of attitude between the physicist and the psychologist. The physicist was generally content with analysis of a complex body into elementary ones. The psychologist more frequently observed that identical elements—e. g., the notes of a melody—might be differently combined to yield quite a different melody, and that the same melody might nevertheless be evoked from a set of quite different notes by transferring it into another key. But the psychologist went beyond the conclusion that the properties of the whole depended on the kind of combination of the parts; he insisted that in the living organism the parts themselves are altered by separation from the whole, and that within it they depend on interrelation between parts of the system to which they belong, and even more generally on the configuration of systems of wider and wider complexity. Thus formal, as well as material, bases of heredity must be (as indeed they were being) taken into consideration. During the development, and indeed throughout the life of the individual, well marked changes might occur in its personality or in one or more of the mental qualities that went to compose it. Sometimes the character of the individual suddenly underwent a complete change, as in cases of multiple personality. Those phenomena, when considered from the standpoint of heredity, suggested that the individual actually inherited a vast number of mutually antagonistic characters, and that their actual appearance in the course of the life of the individual depended on what had been variously termed above internal configuration, constellation, and on such external influences as education and environment.

ANIMAL DYNASTIES IN MONGOLIA

In the Section of Zoology, Prof. H. F. Osborn lectured on the work of the American Museum Expeditions to the Gobi Desert. He said that the twin sciences of geology and paleontology had reached a degree of precision which enabled them, after the relatively brief and intensive surveys of the past four years, to declare "the order of the strata of Mongolia." Included in the Gobi Desert was a stratum equivalent in age to the Oxford clay containing the giant sauropod asiattosauros, a first cousin of William Smith's cetisaurus of Oxford. Physicists had extended the life history of the earth from the momentary 5,000 years of Ussher to the 1,000,000,000 years of Rutherford. That allowed a comfortable margin of 400,000,000 years' time for the wonderful procession of advance recorded in the twenty-seven chapters of Mongolian prehistory, beginning with Purbeck and Oxford Upper Jurassic time and ending practically with the dominance of Genghis Khan, and followed by the decline of Mongolia to its present desert and relatively uninhabited state. In the meantime, this new arid "roof of the world" had been the scene of a whole succession of animal dynasties, fertile, productive, with a relatively temperate and invigorating climate, the homeland of waves of migrating land reptiles and mammals, which successively spread into every other continent. It was singular that this greatest of all life centers of prehistory was the last to be discovered, following by a half to three fourths of a century the discoveries of the great life centers in Australia, in North and South America, in northern Africa and in southern Asia. Although each of these great centers contributed its quota to the prehistory of the earth, none played a part at all comparable to that of central Asia. Osborn described the discovery of the Upper Jurassic of Gobi and the five successive terrestrial life zones of the Age of Reptiles. Following this were the successive life phases of the Age of Mammals, from the small archaic mammals of the Tung Kurch of the eastern Altai Mountains. Then, in 1925, were discovered four periods of the Old Stone Age of man, provisionally referred to the Eolithic, the Acheulean, the Azilian and the Campignian. Osborn's theory was that the high plateau region of Asia, rather than the traditional lowlands of southern and western Asia, was the home of the vigorous line of ancestors of the Dawn Man of the Age of Mammals.

THE HAIRLESSNESS OF MANKIND

In the Anthropological Section, Dr. Fleure in his presidential address said that the human prenatal period was approximately two months longer than that of the great apes. At seven months, the birth time of these apes, the human embryo was thickly clad with down, which disappeared before birth. The suggestion was that the hairlessness of mankind was a secondary result of the longer prenatal period required for the growth of the brain. The production of hair absorbed a large quantity of energy and was closely associated with the thyroid secretion. The reduction of hair growth set free energy and the thyroid secretion to more useful purposes, such as the development of the brain.

Dr. R. T. Gunther made a very different suggestion—that man was still hairy when he discovered the use of fire. A hair clad person clumsily dealing with the new element of fire would be liable to serious accidents, so that hairiness would become a disadvantage and might have been eliminated by natural selection, aided afterward by sexual selection.

Miss M. E. B. Russell dealt with another aspect of the problem. She had plotted the types of hair form shown by the different races and subraces of living men against the different kinds of environment. She found a high degree of correlation and drew the conclusion that hair form and probably other human characteristics were the result of prolonged exposure to a particular kind of environment acting through inheritance.

THE AMERICAN DOMESTIC ATMOSPHERE

In the Section of Physiology, Dr. Vernon said that experiments had shown that Americans are permanently acclimatized to a temperature 6 degrees warmer than ours. The American finds himself most comfortable in a temperature of 70 F., and the Englishman in one of 64. This he attributed to the greater use of central heating systems in the houses of the United States.

The Results of Operation for Cancer of the Breast

Important reports on the natural duration of cancer and the late results of operation for cancer of the breast have been issued by the ministry of health. The first, contributed by Dr. Greenwood, one of the medical officers of the ministry, emphasizes the advantage of early operation for cancer of the breast. In an introductory note, Sir George Newman remarks that, since the report was prepared the departmental committee on cancer (of which he is chairman) has had the advantage of consulting excellent records of cases of women operated on for undoubted cancer of the breast in various provincial cities. The results confirm Dr. Greenwood's arresting conjecture that resort to early operation in cancer of the breast would, in the aggregate, add thousands of years to the active life of the nation. Dr. Greenwood states that the normal expectation of life of a woman aged 55 is 18.87 years. The expectation of life of a woman with untreated cancer of a breast is 3.25 years; the expectation of life of a woman operated on under "average" conditions is 5.74 years, and of a woman operated on under the best conditions it is 12.93 years. By "average" conditions are meant those in which women

usually present themselves for radical treatment; i. e., in conditions not too far advanced to render operation with a view to eradication hopeless. On the average, such patients have admittedly suffered from the disease for a year before operation. By "best" conditions are understood those of a patient whose cancer is strictly localized, does not involve the skin, and has not affected either the axillary or the supraclavicular glands. At present the annual quota of new cases of cancer of the breast in England and Wales is probably at least 5,000. Not more than half the patients undergo the radical operation, and of these fewer than half again are operated on under the most favorable conditions. How many years of life will these 5,000 women, on the average, enjoy? Half of them will have 3.25 years apiece; 1,250 will have 5.74 apiece; 1,250 will have 12.93 years. If all had been operated on under the most favorable conditions, the quota of years would have been 64,650, more than 30,000 years of life beyond what they will actually have to look forward to. On the assumption that only the assumed quarter will be operated on under the most favorable conditions and the remainder under merely average conditions, there would still be secured a bonus of more than 6,000 years of life. Commenting on the results, Sir George Newman remarks: "As a result of careful analysis of the material, it was found, contrary, I think, to the belief of many surgeons as well as of the general public, that when patients undergo the complete operation at an early stage of the disease, before it has spread from the breast, as high a proportion as 80 per cent remain free from the disease ten years after operation."

PARIS

(From Our Regular Correspondent)

Aug. 18, 1926.

Alien Patients in French Hospitals

The large number of foreign patients that invade the hospitals of the large cities of France is beginning to awaken anxiety among administrative officials, since these patients constitute an exceedingly heavy burden. Most of them are without means and therefore contribute nothing to the budget of the cities. In Marseilles, according to a recent report of Dr. Imbert, there were in the hospitals of the city, in 1922, 4,838 foreigners, or 24 per cent of 19,780 patients; in 1923, 6,449 foreigners, or 27 per cent of 23,092 patients; in 1924, 7,646 foreigners, or 30 per cent of 24,859 patients; in 1925, 7,215 foreigners, or 28 per cent of 25,248 patients. Marseilles is particularly affected because it is the gateway for Mediterranean immigration. Large contingents come from Algeria and the Orient, but Italians constitute the largest majority. M. Imbert has suggested that the government request the government of Italy to make a contribution toward the general expenses of the hospitals of Marseilles, or, better still, to ask Italy to found an Italian hospital in Marseilles. In Lyons the percentage of foreigners in the hospitals is only 7 per cent. In Paris the proportion varies greatly according to the section of the city, the average being about 10 per cent. In the Hôpital St. Louis, in the department for venereal diseases, there are, according to Professor Jeanselme, head of the department, 25 per cent of foreigners among the men, and 10 per cent among the women. The expense involved in the treatment of these large numbers of foreigners is becoming a very serious one. Supervision of frontiers does not prevent the unwarranted entrance of sick persons. Many foreign workers (Poles, Czechoslovakians, Italians and Spaniards) cross over into France at night, on foot, far away from the ordinary routes of travel and from the government frontier posts, which are located in the railway stations. But most of the foreign patients found in the hospitals and dispensaries have been taken ill since they entered France, and there is as yet no way provided for securing compensation for their treatment from their respective governments, although eventually an international agreement may be reached in the matter such as has already been accomplished with reference to interned insane persons.

The Coué Method

The death of the pharmacist Coué, who devised a method of treatment by autosuggestion, has been announced. Coué was recognized as an upright man, being entirely different from the ordinary charlatans and healers. He advised his patients to repeat to themselves every morning these words: "I am feeling fine; I am feelingly exceedingly well." He had remarkable success with a certain type of patients—those open to suggestion, and especially those affected with chronic ailments, with a nervous basis, the result of depression and discouragement. He delivered lectures to propagate his method, and members of the medical profession, recognizing the fact that he was only utilizing the well known power of suggestion, showed no hostility. He even made trips to England and America, where he was well received. A Coué institute was established in Paris, with a dispensary for the application of his method, which was directed by a physician. A few days after the death of Coué, this institute requested that it be declared officially to be "of public utility," which, according to French law, would give it the legal right to receive gifts and bequests. The Academy of Medicine was asked by the minister in charge to express its opinion, as is the rule in all official medical questions. Professor Guillain was designated to furnish a report, which was unanimously accepted by the academy and which rejected the request of the Coué institute. The reasons assigned were: Autosuggestion, while it presents facts that are of unquestionable interest, cannot serve as the basis of a mode of treatment for all diseases. It may, in certain cases, expose patients to the danger of an aggravation of their ailments, by inducing them to neglect the normal therapeutic methods that are indicated; for example, in neurosyphilis, patients might be deprived of specific treatment.

About the same time, the tribunal of the Seine imposed sentences on several healers, one of whom asserted that he was an advocate of the Coué method of autosuggestion. Unfortunately, a young man thus treated was suffering from acute appendicitis and had died for lack of proper treatment and without any physician being called in. It is likely that other healers, if they should be brought to trial, will allege that they were applying the Coué method.

The Sale of Medicines of Secret Composition

A decree has been issued by the minister of public health regulating the style of labels to be used on medicinals of complex composition, sold under an arbitrary trade name; that is to say, so-called pharmaceutic specialties, which the public may procure usually without a medical prescription. French law prohibits the sale of remedies the composition of which is unknown, except on the authority of the Academy of Medicine, which is never granted. The containers of pharmaceutic specialties must therefore show by their labels their exact composition. But the ingenious manufacturers of such remedies have found a hundred ways of getting around the law. Some give the required information on an exceedingly small label pasted on the bottom of the bottle, where the public will seldom notice it. Others furnish the information demanded in microscopic characters, practically illegible without a strong glass. Others, instead of designating acetylsalicylic acid, methenamine and barbital by their pharmaceutic titles, use their chemical names, which are entirely unknown to the general public, or even employ atomic notation, to decipher which many physicians, even, have to resort to their chemistry textbooks. Others use the Latin terminol-

ogy. The result is that, for all practical purposes, the specialty is in reality a secret remedy.

The new ministerial decree compels manufacturers of pharmaceutic specialties to indicate the exact composition of their products in a text that is easily read and in terms that are intelligible to all. Chemical formulas and Latin terms are not prohibited but must be accompanied by the ordinary names, at least as regards the substances constituting the active therapeutic principle of the product. The dosage must be exactly indicated and the quantity put up in the container must be given. These regulations are to apply not only to products manufactured in France but also to all foreign imported products.

The Congress of Hygiene

The thirteenth Congress of Hygiene will be held in Paris at the Pasteur Institute, October 19-21, under the chairmanship of M. Henri Martel, member of the Academy of Medicine and director of the sanitary veterinary service of the prefecture of police in Paris. As the congress will be open to foreign physicians, an outline of the program follows. A number of papers will be devoted to the question of immigration and will include an account of the sanitary control of immigrants on their arrival in France, and their supervision in their lodgings. Prominent topics are: the compulsory vaccination of immigrants, the prophylaxis of venereal diseases (which concerns especially the Arabian workmen coming from Algeria), the proposed revision of certain paragraphs of international treaties, and, finally, the hospitalization and treatment of immigrants who have become ill, expenditures for which are weighing very heavily on France, where there are at present 3,000,000 foreigners, most of them without means. The congress will deal also with the new methods of prophylaxis against diphtheria and with the new vaccines, with the rôle of the directors of the bureaus of hygiene in the antituberculosis campaign, and with the conservation of foods by refrigeration. For the benefit of those attending the congress, visits to the public health services of the prefecture of police, to the abattoirs, to the cold storage plants, etc., will be arranged.

The Death of Dr. Maxime Ménard

Dr. Maxime Ménard, one of the most eminent French roentgenologists, has died at the age of 57, the victim of his devotion to duty. For the past sixteen years his life has been a period of terrible suffering. In 1880, when only 22 years old, he was one of the first to study roentgen rays from the point of view of their medical application. His researches were carried on in the laboratory of his teacher Professor d'Arsonval. Later he obtained the use of a small room in the Hôpital Cochin, where he gradually collected his equipment and which became in time one of the most important centers in Paris for roentgenologic study and treatment. As he worked, he published from time to time articles on the subject of roentgenology. During the war, he constructed an apparatus for the localization of projectiles and foreign bodies in the tissues, which is a marvel of precision and which has rendered great service. During recent years he has been studying also the action of ultraviolet rays. To him we owe the knowledge of their antiseptic and cicatrizing effects in the treatment of all kinds of fistulas, including tuberculous fistulas; their action on hypertrophied glands and on scars, and their effect on general nutrition, and more particularly rickets.

But the first workers with roentgen rays were ignorant of the harmful effects they might have. In 1910, Ménard developed a radiodermatitis of the hands. He utilized the occasion to study the lesion most carefully and to describe its nature to roentgenologists. It was he who called attention to what he termed the "cellular anarchy" caused by roentgenization of the tissues, the manifestations of which were found to resemble those of neoplasms. In June, 1914, he was obliged to undergo an amputation of his left index finger. The war broke out soon after, and Ménard at once became more active than ever in his service in the Hôpital Cochin and in the military hospital at Carrières-sous-bois. In 1916, his right index finger was amputated. Soon after his face was attacked. He lost his left eye, and he began to lose shreds from his body. For a time, applications of radium arrested the progress of the affection. Ménard never ceased to work, giving to his collaborators periods of rest, that they might become detoxified, which he did not accord to himself, knowing that he was doomed and wanting to carry on until the last minute. The Audiffred *grand prix* of 15,000 francs for eminent devotion to duty, and the rosette of an officer of the Legion of Honor were accorded him shortly before his death. His funeral was celebrated in a manner befitting his heroism. The president of the republic and the minister of health sent representatives. At his grave, Dr. Mourier, director of public charities, after giving an account of Ménard's heroic life, referred to the many victims of roentgen rays among the roentgenologists of the hospitals of Paris. Leray and Infroit have died, and Lobligeois, Vaillant, Turchini, Bonniot, Haret and Delhem, though still living, have undergone various amputations, and, though they know they are sealing their own doom, they continue to work every day in their hospital services. Mourier described also the new safety devices for the prevention of similar accidents in the future, and announced also the drafting of a law providing a proper compensation for physicians injured while performing their duties in hospitals. Strange to say, at the present time, the law provides compensation only for workmen and employees. Physicians and interns are not classed as such. Maxime Ménard, by his death, has furnished the occasion for the modification of such inhuman legislation.

GENEVA

(From Our Regular Correspondent)

Aug. 21, 1926.

Antituberculosis Vaccination

In a recent issue of the *Journal de Genève*, Dr. Henri Audeoud calls attention to the work accomplished by Calmette and Guérin of the Institute Pasteur at Paris, in the preparation of their vaccine, which they call B. C. G., for immunizing infants against ultimate tuberculous infection. It is generally admitted at present that tuberculosis in adults is nearly always the lighting up of a tuberculosis contracted in infancy; therefore it is of the highest importance to act on children as early as possible. It is only exceptionally that an infant is born tuberculous; he becomes so, and the infection is due in 85 per cent of the cases to a more or less prolonged contact with some member of the family who is tuberculous. Prof. L. Bernard's researches have shown that contamination of nurslings reared by tuberculous mothers is inevitable, with a mortality of 95 per cent if the infant remains with its mother during the first year of life. On the other hand, recent investigations made by Calmette on tuberculosis in nurslings show that infants remaining in contaminated families die at the general rate of 25 per cent during the first year of life; in Paris it is 32.6 per cent. Audeoud points out that an excellent prophylactic measure is to separate the infant from the infected family immediately after birth and to bring him up in healthy surroundings. This was realized in France for the last twenty-two years by Grancher, who founded a society that has sent more than 3,500 babies to the country, their mortality being reduced to practically nothing.

It is not always possible or desirable to take an infant from its mother, and it is in these circumstances that Calmette's vaccination is valuable. It is during the first few days of life, before contamination has been possible, that anti-

tuberculosis vaccination is to be done. Three doses of B. C. G. vaccine are to be given by mouth every second day, otherwise on the third, fifth and seventh day of life. The contents of one ampule are mixed in a spoon with a little milk and given to the infant thirty minutes before nursing. The ingestion of the vaccine produces no disturbance, digestive or otherwise, and seems to be perfectly inoffensive. Tests have been carried on during the last five years in France on 5,183 infants, in Belgium on 117, in Indo-China on 3,352 and in Senegal on 218, a total of 88 per cent infants belonging to tuberculous families. Had these nurslings remained unvaccinated, 25 per cent, or 2,217 infants, would have died during the first year of life, but thanks to vaccination that mortality has dropped to 1.8 per cent, or 169 infants; therefore 2,048 babies have been saved from contracting the mother's tuberculosis.

Audeoud thinks that sufficient proof of the value of this treatment has been offered and hopes that the day is not distant when all the new-born will be submitted to preventive antituberculous vaccination just as done in the case of smallpox. Audeoud also says that it is highly desirable at present to immunize with the B. C. G. vaccine all newborn infants exposed to familial contagion and especially those born of tuberculous parents. The vaccine is sent gratuitously to physicians in any country, but the number of babies and the date of their treatment must be specifically given as the vaccine must be freshly prepared, so that no stock vaccine can be kept on hand.

Limitations of Roentgen Ray in Diagnosis of Tuberculosis

At a recent meeting of the Geneva Medical Society, Dr. Guillermin referred to some mistakes in diagnosis resulting from roentgen-ray examination in cases of suspected pulmonary tuberculosis. In pulmonary cysts or neoplasms, interlobar pleurisy and pneumothorax, the roentgen ray gives information of the greatest importance. In tuberculosis, roentgen-ray examination will reveal the signs of induration, cavities, adhesions and functional disturbances present in certain regions of the lungs. All these data are useful, but they must be properly interpreted. Injections of iodized oil are contraindicated in tuberculosis.

Guillermin, after reporting five cases in which mistakes had been committed, pointed out that the prognosis of tuberculosis did not depend on the extent of the lesions or their degree. Everything depended on the resistance of the organism to the tuberculous infection. Old lesions, with or without cavities, are curable if a good general state of health is maintained. Clinically, recent lesions with very marked roentgen-ray images have a good prognosis if the general health is good, but the inverse is true, especially if the roentgen-ray examination is negative. City children, when they have resisted a first tuberculous infection, develop a resistance superior to that of country children. Of course, many other factors are to be taken into account, especially complications, such as laryngitis and enteritis. On the other hand, Guillermin said that although roentgenologic examination gives many useful data, it alone is insufficient for making a diagnosis and especially a prognosis. The anamnesis and clinical and laboratory examinations are absolutely necessary for the physician in order to form an opinion of the case.

The Surgical Society of Switzerland

At the annual meeting this year of the Surgical Society of Switzerland, the subject for discussion was the use of iodized alcohol in surgery, the reporters being Drs. Jentzer of Geneva, and Odermatt. Among the papers presented mention should be made of "Medullary Anesthetics," by Dr. A. Matthey; "A Strictly Aseptic Technic in Gastro-Intestinal Surgery," by Dr. Perret; "Heterotopic Mucous Proliferations," by Professor Guggisberg; "Delayed Consolidation, or Pseudarthrosis," by Dr. Brun; "Metastatic Colloidal Goiter," by Dr. Dardel, and "Rare Congenital Bone Deformities," by Dr. Nigot. A long discussion on pancreatitis took place, the reporters being Ruppaner, Schweizer and Kummer, while Professor de Quervain offered an unusual clinic at the Inselspital, as did also Professor Wildbolz.

Broadcasting Medical Lectures

Broadcasting popular lectures on medical questions has now begun. Dr. F. Humbert of Geneva, director of the Section of Hygiene of the League of the Red Cross Societies, spoke recently from the Eiffel Tower on tuberculosis.

Faculty Changes

At the Faculty of Medicine of Geneva, Dr. Maurice Roch, professor of clinical medicine, has been appointed dean. The chair of forensic medicine, for many years ably filled by the late Prof. L. Mégevaud, is now occupied by Prof. D. Naville, who at the same time becomes director of the institute of legal medicine after teaching for forty-five years at the faculty. Dr. A. Eternod, professor of histology and embryology, has retired and Prof. E. Bujard now fills the chair. Dr. Charles Du Bois has been appointed professor of dermatology and syphilography in place of Prof. H. Altramare, who has retired. Dr. Charles Juillard has been made extraordinary professor of surgery.

BERLIN

(From Our Regular Correspondent)

Aug. 14, 1926.

The Emergency Medical Service of Berlin

The emergency medical service in Berlin consists of three subdepartments: (1) the emergency stations, (2) the ambulance service, and (3) information service on hospital beds. There are at present forty-two emergency stations, twenty-five of which are connected with hospitals of various kinds, while seventeen are independent centers. These emergency stations are provided with the necessary equipment for the rendering of first aid, but for extended treatment patients are sent elsewhere. The physician in charge not only treats patients in the emergency station itself but also responds to telephone calls or to summons by messenger. When called outside the station, the physician is equipped with a bag which contains all the medical instruments and bandages that he is likely to need in emergency cases. From patients who are able to pay, a suitable fee is exacted, but the aid given does not depend on the capacity of the patient to pay. Persons of limited means are allowed reductions from the regular fee schedule, while patients without resources are not required to pay anything. As a rule, the health insurance society assumes the payment of the bill for medical service. In the streets of Berlin, lamp posts, with red globes to indicate the location of the nearest emergency station, have been erected. At present, however, the lights are not turned on at night, owing to the need of strict economy in municipal administration.

The ambulance service was taken over by the city of Berlin in 1920 and incorporated with the emergency medical service. The ambulance service has twenty-nine auto-ambulances, which can transport, if need should arise, 200 patients daily, although at present the daily average is only about 130. The total number of patients transported in 1925 was about 50,000. The charges vary somewhat with the hospital to which the patient asks to be sent. For persons of small means, the charges are either reduced or entirely remitted. The receipts from the ambulance service are sufficient to keep up repairs and make all the new purchases needed. After each trans-

port, the bed linen or litter is changed. If the case is of an infectious type, not only the bed linen but also all the appurtenances and the car itself are disinfected. Also the sanitary crew is disinfected. A commission, under the chairmanship of the director of the emergency service, is engaged at present in establishing the standard equipment for auto-ambulances. The central information bureau of the emergency medical service, with its telephone exchange, which is directly connected with all hospitals, emergency stations, ambulance stations and the offices of numerous officials, constitutes the control center of the whole emergency and transport service. The necessary directions can be transmitted by its aid most rapidly to the various branches of the emergency and transport services. Its chief function, however, is the furnishing of information in regard to vacant beds in hospitals. Formerly it was not an uncommon thing for an emergency patient to be driven around from one hospital to another in search of a vacant bed. Now the hospitals report twice a day on the number of vacant beds at their disposal. One needs only to call up the information bureau of the emergency service in order to learn in what hospitals vacant beds are available. After a bed is ordered, it is reserved for several hours awaiting the arrival of the patient. The ambulance, after the patient is admitted at the hospital, does not simply return to the garage, but the driver telephones to the central information bureau and receives orders to go elsewhere. In this manner, unnecessary expense and wear on the equipment are avoided, and, what is more important, every ambulance can, in case of pressing demand, be kept constantly busy.

If, in the event of a catastrophe, all the ambulances are in use, the fire department, which is equipped with the type of litter used in the navy, can be called on to assist.

Dr. Frank, director of the Berlin emergency medical service, the *Rettungswesen*, as it is called here, is about to start on a trip to America to study the systems in vogue there.

The Pathogenesis of Cancer

At a recent meeting of the "West German Women Physicians," Professor Caspari of Frankfort-on-the-Main gave a survey of the present status of research in the exceedingly complex and difficult field of the pathogenesis of cancer. He referred to Rudolf Virchow and to the fact that, in his irritation theory, he had advanced a view the essential correctness of which was being recognized more and more. The controversy whether an inherited taint plays a part in the development of cancer appears to have been decided in the affirmative by the researches of American physicians. On the other hand, the parasite theory—the assumption that there is a specific causative agent of the dreaded affection, after the manner of the causative agents of the ordinary infectious diseases—has been almost universally rejected in recent years, and for reasons the validity of which can scarcely be denied. It is evident that this decision is of great practical importance to the physician. Recently a number of German journals contained a news item to the effect that Dr. Schumacher of Berlin had discovered the causative agent of cancer, but further investigation proved the erroneousness of the statement. It appears that the author, by means of a special staining method, had been able to discover peculiar S-shaped bacilli in the marginal areas of cancer tumors, which he assumed, without further investigation, were the causative agents of the disease, whereas they were doubtless only shreds of elastic cellular tissue. On the other hand, the experiments of the American investigator Rous are of particular value. He found the cause of a malignant neoplasm in chickens to be an invisible virus. Not only with cell-free filtrates but also with fluidextracts from pulverized (thus likewise cell-free) chicken tumors, he was able to produce similar tumors in other chickens, although, to be sure, he found it necessary to use as an irritant kieselguhr, or diatomaceous earth, at the site of the injected material. Strange to say, his procedure failed when applied to mammals. Later, however, the English physician Gye succeeded in developing, by a complicated process, a virus from mouse and rat cancer by adding a "specific factor" to the tumor filtrate. Opposed to this conclusion, based on these and other researches, that cancer is produced by one or possibly several invisible and probably everywhere present causative agents, Professor Caspari advanced a new view, which he termed "the necrohormone theory." According to his theory, necrohormones are substances that develop following cell destruction, and which, in a weak concentration, cause cell irritation and, in a strong concentration, further cell destruction. If, in any part of the organism, there is a portion of the body tissues subsisting under unfavorable conditions of nutrition, and especially if suffering from lack of oxygen, many cells of the tissues will be destroyed, while the surviving cells will gradually adapt themselves to the abnormal conditions of existence, and thus a change in the cellular metabolism may be brought about, which will result in the normal cell being changed into a cancer cell. The further development will depend, to a great extent, on the disposition of the organism concerned. If there is no disposition to cancer, a malignant growing tumor will not develop. Professor Caspari's conception rests, thus, fundamentally on Rudolf Virchow's irritation theory. Of practical importance is the fact that the stage of genuine cancer is preceded by a condition in which the physician can observe microscopically suspicious irregularities of cellular life, which often retrogress without exerting a serious effect on the health of the subject.

BUDAPEST

(From Our Regular Correspondent)

Aug. 2, 1926.

Congress of Hungarian Internists

Hungarian internists gathered recently in Balatonfüred—a picturesque bathing resort on the shores of Lake Balaton.

INSOMNIA

Professor Ranschburg gave an address on the pathology and therapeutics of insomnia. He said that recent researches have confirmed the assumption that the sleep center is in the region of the third cerebral ventricle. In man, however, and chiefly in cultured man, this center learned to subordinate its periodic activity to the organ of mental functions; that is, to the cerebral cortex. Thus, the thought of falling asleep soothes, and the fear of not being able to sleep inhibits, the automatism of this center. Morever, study of the depth of sleep in persons with refreshed and with exhausted nerves proved that sleep and wakefulness are not antagonistic conditions, but transitions; wakefulness passes through drowsiness, slumbering and dreamful dozing to deep and unconscious sleep. In some cases a patient complains of having been awake all night, while those round him state the contrary. The fragments of the ego of the dozing person were vigilant, while the preponderant part of the cerebral cortex was resting or sleeping. Such persons will never suffer from lack of sleep, but they will not feel refreshed. They are more tired on awaking than on going to bed.

The causes of insomnia are chiefly disorders of the nervous system and bodily pain. Physical and climatic treatment is of the first importance. Judicious use of sedative drugs may be valuable and without danger, while with improper use they become inefficacious and detrimental. Drugs may help to restore the function of faulty nervous centers. Diet and a daily regimen is important. A regimen based on the condition of the individual patient is the method of choice.

SURGERY OF THE GALLBLADDER

Prof. Tibor Verebelyi read a paper which was based on 1,314 operations for gallstones. He opposes the view that the seat of the formation of gallstones is in the liver. He carefully examined the stones and gallbladders from several hundred recent operations, and is of the opinion that gallstones are formed in the gallbladder. He is led to the conclusion that the presence of gallstones and the development of cancer of the gallbladder and gall ducts is in some measure connected; not that cancer is caused by gallstones, but that the changes caused by gallstones pave the way for the formation of cancer. The accusation against surgical treatment of gallstone disease, that the disease beings again, is unfounded. In cases wherein it did return, the cause could be sought in neglect of the cases. Cure of gallstone disease with unobjectionable result will be achievable when early operation is the rule. Of course, this does not mean, concluded Professor Verebelyi, that experiments with proper nonsurgical treatment should not be made.

CESAREAN SECTION

Prof. Stephan Toth pointed out that at present cesarean section is not excessively dangerous. If the uterus has not been infected prior to operation, recovery takes place as certainly as after any other laparotomy. The fetus likewise survives the operation. He showed drawings illustrating how the operation is performed today, and also historical steel cuts showing how it was done a hundred years ago. In times gone by, cesarean section was employed only if the fetus could not be delivered by the usual methods. Nowadays the complications for which the operation is performed are much more dangerous than the operation itself. Toth performed ninety-six cesarean sections in the last eight years. In these cases every child was delivered alive. Three mothers died, but their deaths cannot be attributed to the operation. Although every practitioner ought to know how to perform a cesarean section, his more important duties are to recognize the complications of pregnancy which call for cesarean section, and to send the patient to the nearest hospital in due time.

INDICATIONS FOR CARBON DIOXIDE BATHS

Dr. Francis Schmidt, lecturer on balneotherapy, said that many physicians are of the opinion that carbon dioxide baths are contraindicated in the presence of hypertension, angina pectoris and a decompensating heart. However, he has proved that carbon dioxide baths, if given skilfully, reduce hypertension, calm the nervous system, and thereby improve the condition of the patient. Many decades ago the sick and the healthy used the baths indiscriminately and without control. Thus, some untoward consequences resulted and the baths became disapproved by many physicians. Today the temperature and the carbon dioxide content of the water can be regulated according to individual needs. Thus, carbon dioxide baths can be used with success even in cases in which, of old, they would have been forbidden.

Marriages

DOWLING BLUFFORD STOUGH, JR., Hot Springs National Park, Ark., to Miss Mary Tansill Hay of Little Rock, July 19.

GEORGE THOMAS ALEXANDER, Moulton, Ala., to Miss Anne Bert Webb of Atlanta, Ga., June 19.

ISAAC R. PELS, Baltimore, to Miss Margaret Riggs Black of Howard County, Md., August 26.

PHILIP D. BUNCE, Hartford, Conn., to Miss Julia Locke Frame of New York, July 27.

JEROME L. ROSENGARD to Miss Sylvia Pollack, both of Chicago, July 25.

Deaths

Richard Henry Lewis, Raleigh, N. C.; University of Maryland School of Medicine, Baltimore, 1871; professor of diseases of the eye and ear, Savannah Medical College, 1875-1876; professor of diseases of the eye, and of hygiene, University of North Carolina, 1902-1909; past president of the Conference on State and Provincial Boards of Health of North America, the American Public Health Association, the North Carolina Tuberculosis Association, and member and past president of the Medical Society of the State of North Carolina; member of the state board of medical examiners, 1884-1888, and the board of aldermen of Raleigh, 1884-1885; secretary-treasurer, North Carolina State Board of Health, 1892-1909; aged 76; died, August 6.

Allen John Smith, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1886; member of the American Association of Pathologists and Bacteriologists; professor of pathology and comparative pathology, in charge of the course in tropical medicine, and formerly dean at his alma mater; on the faculty of the University of Texas Department of Medicine, Galveston, 1891-1903; served during the World War; author of "Lessons and Laboratory Exercises in Bacteriology"; aged 62; died, August 18, following a long illness.

John Wesley Long ● Greensboro, N. C.; Vanderbilt University School of Medicine, Nashville, 1883; University of Nashville Medical Department, 1884; emeritus professor of diseases of women and children, Medical College of Virginia, Richmond; member of the House of Delegates of the American Medical Association, 1916-1917; past president of the Medical Society of the State of North Carolina, and the Southern Surgical Association; proprietor of a hospital bearing his name; aged 67; died, August 1, of coronary thrombosis.

John Leo Tierney ● St. Louis; St. Louis University School of Medicine, 1914; assistant professor of medicine at his alma mater; member of the American College of Physicians; formerly on the staffs of St. Mary's, Frisco, St. John's and the St. Louis City hospitals; served during the World War; aged 35; died, July 28, at his summer home in Santa Fe, N. M., of angina pectoris.

Elon Obed Huntington ● Lieutenant Commander, U. S. Navy, retired, DeLand, Fla.; Medical Department of Columbia College, New York, 1896; was appointed an assistant surgeon in 1898, and retired in 1910 on account of disability incident to the Service; Spanish-American and World War veteran; aged 56; died, August 3, at the DeLand Memorial Hospital.

Clayton D. Fretz, Sellersville, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1868; member of the Medical Society of the State of Pennsylvania; formerly president of the Sellersville National Bank; aged 81; died, August 17, at the Lankenau Hospital, Philadelphia.

John J. Steiner ● Richfield, Utah; Homeopathic Medical College of Missouri, St. Louis, 1889; College of Physicians and Surgeons, Baltimore, 1901; aged 63; died, July 19, following an operation for abscess of the liver.

William Bertram Berninger, Allen, Okla.; Central College of Physicians and Surgeons, Indianapolis, 1905; member of the Oklahoma State Medical Association; aged 43; died, June 18, of acute dilatation of the heart.

N. P. Carey, East Fairfield, Vt.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1902; died, August 7, at a hospital in St. Albans, of injuries received in an automobile accident.

Joseph Lorenzo Baker, Carlton, Ga.; Southern Medical College, Atlanta, 1884; Atlanta Medical College, 1885; member of the Medical Association of Georgia; aged 65; died, July 23, of pneumonia.

Elisabeth Ella Courtney, Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1926; aged 35; died, July 17, at the Grant Hospital, following an operation for goiter.

Locero Jackson Gibbs, Chicopee Falls, Mass.; Dartmouth Medical School, Hanover, N. H., 1875; member of the Massachusetts Medical Society; Civil War veteran; aged 81; died, July 12.

Godfrey Frederick Shimonek, Yonkers, N. Y.; Rush Medical College, Chicago, 1873; formerly professor of surgery at the Milwaukee (Wis.) Medical College; aged 74; died, June 27.

William Fletcher McNutt, Jr., San Francisco; Medical School of Harvard University, Boston, 1900; M.R.C.S., England, 1902; aged 50; died, August 10, of aortic regurgitation.

Howard Lewis Kaucher ✠ Boundbrook, N. J.; Medico-Chirurgical College of Philadelphia, 1900; formerly on the staff of the Riverlawn Sanatorium; aged 48; died, August 3.

Gilson Ewing Townsend, Bowling Green, Ky.; Vanderbilt University Medical Department, Nashville, 1879; formerly mayor; aged 68; died, August 22, following a long illness.

Orr Hileman Shaffer, Miami, Fla.; Jefferson Medical College, Philadelphia, 1896; formerly on the staff of the Altoona (Pa.) Hospital; aged 57; died, in July, at Rochester, Minn.

Charles Louis Bonnemer, Montz, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1897; coroner of St. Charles Parish; aged 53; died, August 10.

George Ellis Putney ✠ Paynesville, Minn.; Medical School of Harvard University, Boston, 1876; formerly on the staff of the Paynesville Hospital; aged 80; died, June 23.

Emmett D. Page, Brooklyn; Long Island College Hospital, Brooklyn, 1882; member of the Medical Association of the State of New York; aged 73; died, July 30.

George Gardner Phelps, Utica, N. Y.; Medical Department of the University of the City of New York, 1884; aged 64; was found dead, July 15, of heart disease.

Eva W. Lake, Demarest, N. J.; Woman's Medical College of Pennsylvania, Philadelphia, 1891; aged 67; died, July 29, at Detroit, of carcinoma of the stomach.

William Callaway Estes, Atlanta, Ga.; Atlanta Medical College, 1895; president of the Rex Bank; aged 69; died suddenly, August 12, at his home in Rex.

Edmund N. Daniels ✠ Beloit, Kan.; University Medical College of Kansas City, Mo., 1900; on the staff of the Beloit Hospital; aged 56; died, July 22.

Theodore J. Peterson ✠ Chicago; Dearborn Medical College, Chicago, 1905; aged 69; died, July 1, of chronic myocarditis and endocarditis.

John Milton Shaw, Victoria, B. C., Canada; Trinity Medical College, Toronto, Ont., 1880; aged 67; died, March 25, of cerebral thrombosis.

John J. C. Ross, Bloomington, Ind.; Cincinnati College of Medicine and Surgery, 1885; aged 67; died, August 19, of heart disease.

Frederick Brakeman Sutton, Birmingham, Ala.; University of Michigan Medical School, Ann Arbor, 1881; aged 66; died in July.

Cornelius Cooper Abbott, Cincinnati; Medical College of Ohio, Cincinnati, 1896; aged 65; died, August 13, of cerebral hemorrhage.

Lucius Gerald FitzGerald, Port Huron, Mich.; Detroit Medical College, 1877; aged 76; died, August 7, of cerebral hemorrhage.

Charles Sumner Minnich ✠ Palmer, Neb.; Medical College of Ohio, Cincinnati, 1884; aged 67; died, July 4, of cerebral hemorrhage.

Francis L. Ingram, Stewardson, Ill. (licensed, Illinois, 1878); aged 90; died, August 10, at the home of his son in St. Louis.

Joseph Tyndall Sparks, Yeddo, Ind. (licensed, Indiana, 1897); aged 73; died, August 1, of carcinoma of the throat.

Richard W. Taylor, Pewaukee, Wis.; Hahnemann Medical College and Hospital, Chicago, 1893; aged 74; died, July 2.

William Bartholow McDonald, Baltimore; Baltimore Medical College, 1897; aged 52; died, July 17, of heart disease.

Francis Gaylord Fisher, Rockford, Mich.; Detroit College of Medicine and Surgery, 1906; aged 42; died, August 10.

George Israel Rochelle, New York; College of Physicians and Surgeons, Baltimore, 1898; aged 58; died in August.

Halsey D. Snover, Steamburg, N. Y.; University of Buffalo Department of Medicine, 1884; aged 59; died, July 26.

Edgar R. Ferguson, Coaldale, Ark. (licensed, Arkansas, 1903); aged 54; died, August 13, of heart disease.

Romy W. Burch, Ekron, Ky.; Kentucky School of Medicine, Louisville, 1893; aged 56; died, July 26.

Reinbold Speer ✠ St. Louis; St. Louis University School of Medicine, 1904; aged 59; died, July 7.

O. S. Whipp, Bradenton, Fla. (licensed, Florida, year unknown); aged 75; died recently.

Edith May Brooks ✠ Boston; Tufts College Medical School, Boston, 1902; died, July 1.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

AURINE EAR BALSAM

More Deafness Cure Quackery

"Aurine Ear Balsam" is put out by the Aurine Remedy Company of Chicago. The main thesis of the Aurine Ear Balsam advertising is that a Mr. Folds, who had "suffered fifteen years," was "relieved almost at once" by the balsam. According to Folds' story, as published in the Aurine advertising matter, he had earaches and head noises from early childhood. The physicians to whom he went did not help him and the trouble got worse until, by the time he was fifteen, he was partly deaf. He claims to have had discharges

AURINE EAR BALSAM

AURINE Ear Balsam is not a new product. It was first made 25 years ago by Charles G. Fouçek who is President of the Aurine Remedy Co. Mr. Foucek owned several drug stores in Chicago over 30 years, these he has recently sold to devote all his time to the manufacture of Aurine Ear Balsam and help all those who suffer from ear trouble.

Mr. Foucek is a member of the Board of Pharmacy, Dept. of Reg. and Education for the State of Illinois. He is a service veteran, being Chairman of the Draft Board in Chicago during the World War.

Aurine Ear Balsam has been sold all these 25 years in the drug stores and thru the mail and already over a hundred thousand bottles have been sold. 100,000 satisfied customers. Many have written happy letters and testimonials a few of which are printed in this booklet.

Photographic reproduction of part of the advertising material accompanying Aurine Ear Balsam.

from the ear and to have suffered intense pain. He tried ear 'phones and rubber ear drums, and "a great number of other preparations," but they either did not help him or made matters worse. Then Aurine Ear Balsam came into his life and after he had used two bottles his troubles were over. The discharge stopped and the ringing and buzzing in the ears disappeared.

Mr. Folds, it seems, is Milton W. Folds, the manager of Aurine Remedy Company. Aurine is the alleged discovery of one Charles C. Foucek, who is president of the Aurine Remedy Company. Foucek, according to the advertising, owned several drug stores in Chicago for over thirty years, and recently sold these in order to devote all his time to the manufacture and exploitation of Aurine Ear Balsam. It is stated, further, that Mr. Foucek is a "member of the Board of Pharmacy, Department of Registration and Education for the State of Illinois."

According to the Aurine "literature," the daily use of the balsam will cause discharges from the ear to stop, will remedy the deafness of old age, and restore thickened, relaxed or shrunken drums to their natural condition. Of course, the Aurine concern plays up testimonials. From reading these, the deaf will get the impression that Aurine Ear Balsam will cure deafness and other ear troubles.

The price of Aurine Ear Balsam is $2 a package. The purchaser gets a one-ounce bottle of the "balsam," an elongated toothpick with a pledget of cotton on one end, a medicine dropper, and a small wad of absorbent cotton. The deaf are told to instil three or four drops of the balsam into each affected ear once a day, and to clean the external meatus every other morning with the swab. It is suggested that "it is a good idea to put fresh cotton on the ear swab each time it is used." Those with discharging ears are told to mix five drops of the balsam with four tablespoonfuls of warm water and inject the mixture into the ear with a glass dropper every alternate day.

Some bottles of Aurine Ear Balsam were purchased and turned over in their unopened original packages to the A. M. A. Chemical Laboratory for analysis. The Laboratory reports:

LABORATORY REPORTS

"Five original packages of Aurine Ear Balsam (Aurine Remedy Company, 1832 South Racine Avenue, Chicago, Illinois), were submitted to the A. M. A. Chemical Laboratory for examination. In each package was a one-ounce amber bottle containing 30 cc. (approximately one fluidounce) of a thick, syrupy, brownish liquid with some suspended material, having an aromatic odor, resembling essential oils, such as eucalyptol and menthol. On placing two drops on the tongue there was noted a sweet taste (resembling glycerin) followed by a slight numbness, suggestive of a local anesthetic; the reaction of the mixture to litmus was acid. The specific gravity at 25 C. was 1.1685. No statement as to the composition was given on the trade package or in the accompanying circular. Qualitative tests indicated the presence of glycerin, boric acid, a trace of sulphate, and a substance yielding an alkaloidal reaction. (This reaction is also given by local anesthetics). The alkaloidal substance yielded tests which were suggestive of the local anesthetic Butyn,[1] *p*-aminobenzoyl-γ-dinormalbutylaminopropanol sulphate.—γ-dibutylaminopropyl-*p*-aminobenzoate.-*N*-sulphate.—$[NH_2.C_6H_4.COO(CH_2)_3N(C_4H_9)_2]_2.H_2SO_4$.

"The aromatic oils resembled eucalyptol and menthol in odor, with other oils not identified. Heavy metals and organic acids were not found.

"Quantitative determinations yielded the following:

"Ash	0.2 per cent
"Boric acid	0.8 per cent
"Glycerin—calculated from the specific gravity, at least	60.0 per cent
"(Approximately 50 per cent was isolated in pure form)	
"'Alkaloidal' substance	0.1 per cent

"From the foregoing it may be concluded that Aurine Ear Balsam is essentially a colored aromatic 66 per cent solution of glycerin to which has been added a very small amount of boric acid and a local anesthetic resembling Butyn."

Aurine Ear Balsam, then, in the light of the analysis just given, is essentially glycerin with a small amount of boric acid, and this simple mixture is sold under the claim that no matter what ear ailment you may be suffering from, you will get relief if you will use Aurine. A nice business for a "member of the Board of Pharmacy, Department of Registration and Education for the State of Illinois" to be engaged in!

1. The free base was an oily substance; with hydrochloric acid it yielded crystals which in the quantities present could not be purified sufficiently to take the melting point. The product responded to various reactions described by Warren (J. A. Pharm. A. 12: 512, 1923). It yielded a picrate which, according to thermal analysis, indicated the product to be a picrate of the base of Butyn.

Incidence of Diabetes in United States.—The Metropolitan Life Insurance Company asserts that there are a million persons with diabetes in the United States and that the disease is more prevalent among Jews than among other peoples. The three districts having the highest number of diabetics and in which the death rate is about 15 per hundred thousand are: (1) New England and the districts in and near New York, with Vermont, New Hampshire, Maine, New York and New Jersey leading the list in this section; (2) California, Oregon and possibly Washington; (3) the section in the Middle West including Indiana, Michigan, Illinois and Missouri.

Correspondence

THE SURGICAL TREATMENT OF SPASTIC PARALYSIS BY SYMPATHETIC RAMISECTION

To the Editor:—In The Journal, June 19 and 26, the relationship of the sympathetic nervous system to the surgery of spastic paralysis as advocated by myself is discussed. There are a few comments I should like to add to the discussion. In the first case, Dr. Steindler struck the right note when he suggested that the investigation should be investigated. Let me deal first of all with the statements of Drs. Forbes and Cobb. They are evidently unfamiliar with my original paper, or they would not make the statement that Hunter's theory and experiments preceded the operative treatment. As a matter of fact, with my first paper (A New Operative Procedure in the Treatment of Spastic Paralysis and Its Experimental Basis, *M. J. Australia* 1:77 [Jan. 26] 1924) John I. Hunter (The Postural Influence of the Sympathetic Innervation of Voluntary Muscle, *M. J. Australia* 1:86 [Jan. 26] 1924) published a neurologic comment that was built up out of the results I obtained from my experiments and operations. It was the facts obtained from my experiments that enabled me to carry out with confidence the operation on the human subject. Hunter's experiments on the wing of the bird (The Significance of the Double Innervation of Voluntary Muscle Illustrated by Reference to the Maintenance of the Posture of the Wing, *M. J. Australia* 1:581 [June 14] 1924) were carried out about one year after my experiments on the goat, and were published as additional evidence corroborating the results I obtained on the goat and the human subject.

Alexander Forbes and Stanley Cobb (Physiology of Sympathetic Nervous System in Relation to Certain Surgical Problems, The Journal, June 19, 1926, p. 1884) relate their experimental experience and report results that were by no means uniform. In their whole series there is slightly less rigidity on the operated side. Further, they quote from Kuntz and Kerper (*Am. J. Physiol.* 76, No. 1, 1926), who found a consistent diminution of tone following sympathectomy. Kuntz and Kerper carried out experiments on dogs, which reproduced exactly the results that I obtained in the goat. They did not decerebrate their dogs, but, on placing them under anesthesia, found changes similar to those I had described in connection with the decerebrate animal. Their observations offer a great contrast to the failure recorded by Forbes, Cobb and Davis.

Can any fair minded critic say that these results contradict mine, or in any way depreciate the result that I obtained from experiments on goats? No one has yet attempted to reproduce my experiments on goats, and, in contrast to the experiments related by Forbes and Cobb, I did get a consistent result throughout the whole series, and, so striking was this result that I find it difficult to believe that any one could carry out the same procedure and not be struck with the behavior of the limb deprived of its sympathetic nerve supply.

With regard to Dr. Davis' criticisms, it is refreshing to notice that Kuntz and Kerper repeated Hunter's experiments on the wing of the bird and corroborated his observations. Dr. Davis' repetition of Walshe's criticism, that Hunter must have injured the anterior nerve roots in his experiments, is not consistent with the fact that these birds could fly quite well after the sympathetic nerves had been removed. Surely, injured nerve roots causing changes in posture are not consistent with voluntary control sufficient to maintain a flight.

Dr. Davis (Davis, Loyal; and Kanavel, A. B.: The Effect of Sympathectomy on Spastic Paralysis of the Extremities, THE JOURNAL, June 19, 1926, p. 1890) relies for his criticism of my results on experiments conducted on cats. While in Chicago I had an opportunity of examining one of the cats employed by Dr. Davis and of pointing out to him changes in the operated side similar to those described by Kuntz and Kerper. I understood from his conversation that he admitted that these changes were present, but the admission has not yet appeared in his papers. His difficulty occurs in the decerebrate animal, and it is yet to be proved that his method is not open to objection. He says that I used the guillotine method in performing decerebration, but again, reference to my paper of December, 1924 (*Surg. Gynec. Obst.*), will show that his quotation is not accurate. I have distinctly stated that decerebration was carried out by gradually removing the brain until the appropriate level was reached; in fact, in some instances a cautery was used, until extension appeared in the head and in all four limbs.

But, I have also carried out experiments in the cat and I find that by adopting the same technic a result is obtained that does not differ in any material respect from that obtained in the goat. There is, however, greater difficulty in removing the abdominal sympathetic trunk; and as the limbs of a cat are considerably smaller than those of a goat, the changes are not as evident.

With regard to the clinical evidence: The operations performed by Drs. Kanavel, Pollock and Davis were not on subjects I would have chosen; but, even so, they did not completely fail to confirm my results, as they have contended. These authors (*Arch. Neurol. & Psychiat.* **12**:197-225 [Feb.] 1925) show photographs of a man balancing on the right foot, which he could not do before operation. Another photograph illustrates the change in the range of movement in the right upper limb. Surely, this is a positive result, and some change did occur in this patient.

Dr. W. B. Carrell (THE JOURNAL, June 26, 1926, p. 1978) carried out thirty-five ramisections, following which, he says, "improvement in function has not been marked, but in fifteen cases the gait was improved to the extent of more ease in flexing and bending the knee and walking with less rigidity." It is hard for me to believe that there was not more ease in bending and flexing the hip and the ankle as well in such patients. The parents and patients themselves were pleased with the improvement. Surely this is a positive result. Dr. Carrell does not state whether the Little's disease was of the paraplegic type or hemiplegic type, so that I am unable to criticize his statements further.

I am aware that Dr. Davis tells us (*Surg. Gynec. Obst.*, March, 1926) that "to rely upon a patient's statements or the simple observations of a patient's limb following operation is not only untrustworthy, but wholly unscientific." Apparently this applies only to patients who have been treated by ramisection for spastic paralysis, for I have no doubt that Dr. Davis relies on his patients' statements concerning relief of pain from trigeminal neuralgia after operation, as I rely on my patients' statements when they tell me that they can now walk, or their stride has become longer, or they can now balance on their limbs, or they can walk backward, when this was impossible before operation. And as regards the simple observation of the patient's limbs, Dr. Carrell was satisfied that his moving pictures showed change in the range of movement. The electromyographs relied on by Dr. Davis still need interpretation.

The less favorable results obtained by Dr. Carrell in the upper limb are easily explained. In the upper limb it is much more difficult to do a complete operation and, in addition to that, the patient has not to use it as he has the lower limb. If Dr. Carrell were to put the good limb out of action, correct deformities in the defective limb and go in for intensive physical education of the defective limb, these patients would rapidly improve.

In the light of these comments, it is perhaps a little premature to say with the writer in the Chicago *Daily News* of April 2, 1926, that the work put forward by Hunter and myself is largely discredited, and further to say, "Thus passes a widely lauded discovery, demonstrating anew the manner in which modern intensive methods of scientific research establish quickly true progress or fallacy in medical investigation." This sounds as if the above mentioned gentlemen have a monopoly of scientific research; but in addition to my results, they have now to disprove those of Kuntz and Kerper, whose experiments have apparently been very carefully carried out.

In conclusion, I have to state that in this country at least, the surgical results of ramisection in the treatment of spastic paralysis exceed those of any other method yet suggested, and these results are not obtained by me alone. For example, in the well known Royal Alexander Hospital for Children, at Sydney, Dr. R. B. Wade, senior surgeon, now considers ramisection the operation of choice in congenital spastic paraplegia.

N. D. ROYLE, Craignish,
185 Macquarie Street,
Sydney, Australia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MOSQUITO BITES

To the Editor:—I have a patient, a boy, aged five, who is terribly poisoned by the bite of the mosquito. Each bite causes considerable swelling and intense itching. The child scratches the bites, changing them quickly into sores that ooze serum. At times his legs and arms are covered with sores. Local applications to keep the mosquitoes away seem to be of little use. The condition is so severe that the mother has raised the question of the value of internal treatment or the possibility of inoculations. I am writing to ask if you can suggest something besides the usual local treatment.

C. H. SANFORD, M.D., Tewksbury, Mass.

ANSWER.—The child should be protected as much as possible from mosquitoes by means of clothing and screens. Local application of calamine lotion containing sodium biborate and 1 per cent menthol should be made immediately after the bites have occurred, and continued as long as the irritation exists. There appears to be no reason why any kind of inoculation would be of value.

COOKING IN ALUMINUM UTENSILS

To the Editor:—The ——— Aluminum Company, which has salesmen throughout the country demonstrating a new process aluminum cooking utensil, claims that the use of this utensil enables the housewife to cook her meats and vegetables without water, preserving both the taste and the important food elements. Are these claims substantiated by the observations of known food authorities? Please omit my name.

M.D., Chicago.

ANSWER.—There seems to be no reason why food should not be properly cooked in aluminum cooking utensils without the addition of water. Authorities on dietetics are in general agreed that the boiling in water removes the components that are soluble, thus depriving the food of various mineral salts and fat.

According to Friedenwald and Ruhräh, when beef is cooked in water, from 3.25 to 12 per cent of the nitrogenous matter, 0.60 to 37 per cent of the fat, and 20 to 67 per cent of the mineral matter of the original uncooked meat may be found in the broth.

Vegetables cooked in water gain water and lose part of their carbohydrates and proteins and much of their mineral matter, and nearly the whole of their nonprotein nitrogenous component. There is no evidence to indicate that the cooking of food in aluminum utensils without water is in any way harmful.

STERILIZATION OF NONBOILABLE CATGUT

To the Editor:—I have been using chromic catgut in tubes, which we have been in the habit of boiling with the instruments. Recently we received a shipment of Hauder's chromic catgut which was labeled nonboilable. Before the label was noticed, the catgut was boiled with the instruments and used as before. No difference was noticed during the operation, which was for ventral hernia. Please tell me what damage is done to the catgut by boiling, and what effect it will have on the success of the hernia operation?

M.D., Mississippi.

ANSWER.—The difference between boilable and nonboilable catgut suture material lies mainly in the method of sterilization of the tube; that is, some surgeons prefer to keep their catgut tubes in antiseptic solutions until ready to be used. Others prefer to boil the tubes with the instruments. To make this possible, two different tubing solutions are used; that is, the fluid in which the suture material is immersed. One solution lends itself to boiling; the other does not. When the nonboilable tube is boiled, the contained catgut is apt to gelatinize, as it is far more friable, less stiff, than the catgut of the boilable tube; but that does not change the time of absorption of the catgut in the tissues. It is better, however, not to boil the nonboilable catgut because, at best, the absorption of catgut is more or less problematic. It may occur more rapidly than is the rule. Sutures are used only to insure immobility; they do not promote or hasten union, except so far as they keep the healing tissue at rest.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS. Colorado: Denver, Sept. 13. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY. Colorado: Denver, Sept. 13. Sec., Dr. H. W. Loeb, 1402 So. Grand Blvd., St. Louis, Mo.

ARIZONA: Phoenix, Oct. 5. Sec., Dr. W. O. Sweek, Phoenix.

CALIFORNIA: Sacramento, Oct. 18-21. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, Oct. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: State Board of Healing Arts, New Haven, Oct. 9. Prerequisite to license examinations. Box 1895, Yale Station, New Haven.

DISTRICT OF COLUMBIA: Oct. 12. Sec., Dr. Edgar P. Copeland, Suite 110, 1801 Eye Street, Washington.

FLORIDA: Tallahassee, Oct. 12-13. Sec., Dr. William M. Rowlett, Box 603, Tampa.

GEORGIA: Atlanta, Oct. 12-14. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Boise, Oct. 5. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

ILLINOIS: Chicago, Oct. 5-7. Supt., Regis. and Education, Mr. V. C. Michels, Springfield, Ill.

IOWA: Des Moines, Oct. 12-14. Commissioner, Dept. of Health, Dr. Don M. Griswold, Des Moines.

KANSAS: Topeka, Oct. 12. Sec., Dr. Albert S. Ross, Sabetha.

MICHIGAN: Lansing, Oct. 12-14. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, Oct. 5-7. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

MONTANA: Helena, Oct. 5-7. Sec., Dr. S. A. Cooney, Helena.

NEVADA: Carson City, Nov. 1. Sec., Dr. Simon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 19-20. Sec., Dr. Charles G. Kelley, Trenton.

NEW MEXICO: Santa Fe, Oct. 11-12. Sec., Dr. W. T. Joyner, Roswell.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 20-23. Chief, Professional Exams. Bureau, Mr. Herbert J. Hamilton, State Education Building, Albany.

OKLAHOMA: Oklahoma City, Sept. 14-15. Sec., Dr. J. M. Byrum, Shawnee.

RHODE ISLAND: Providence, Oct. 7-8. Sec., Dr. B. U. Richards, Providence.

UTAH: Salt Lake City, Oct. 5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WISCONSIN: Basic Science Board, Madison, Sept. 18. Sec., Dr. M. F. Guyer, University of Wisconsin, Madison.

WYOMING: Cheyenne, Oct. 4-6. Sec., Dr. G. M. Anderson, Cheyenne.

Virginia June Examination

Dr. J. W. Preston, secretary of the Virginia Board of Medical Examiners, reports the written examination held at Richmond, June 16-19, 1926. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Eighty-three candidates were examined, all of whom passed. Fifteen candidates were licensed by reciprocity and one by endorsement of his credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Johns Hopkins University Medical Dept.	(1925) 86,	(1926)	90
Meharry Medical College		(1926)	81
University of Tennessee College of Medicine		(1926)	83.5
Medical College of Virginia	(1923) 89, (1925) 89,	(1926)	80, 81, 82, 82, 82, 83, 83, 83, 83, 84, 84, 84, 84, 84, 85, 85, 85, 86, 86, 86, 86, 86, 86, 86, 86, 86.5, 87, 87.5, 88, 88, 88, 88, 88, 88, 89, 89, 89, 89, 90, 90, 90, 90, 90, 90.5, 91, 92, 93, 94
University of Virginia Department of Medicine	(1925)		88, 88, 88, (1926) 82, 83, 85, 85, 86, 86, 86.5, 86.5, 87, 87, 88, 88, 88, 88, 89, 89, 89, 89.5, 90, 90, 90, 90, 92, 93, 93, 95

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University Medical School		(1921)	Maryland
University of Georgia Medical Department		(1925)	Georgia
College of Physicians and Surgeons, Chicago		(1890)	Wisconsin
Hering Medical College, Chicago		(1910)	Illinois
Indiana University School of Medicine		(1923)	Indiana
College of Physicians and Surgeons, Baltimore		(1891)	N. Carolina
University of Maryland School of Medicine		(1923)	N. Carolina
University and Bellevue Hospital Medical College		(1918)	New York
North Carolina Medical College		(1917)	W. Virginia
University of Pennsylvania School of Medicine		(1917)	Minnesota
Medical College of the State of South Carolina		(1924)	S. Carolina
Meharry Medical College		(1924)	W. Virginia
University of Tennessee College of Medicine		(1910)	Tennessee
Vanderbilt University School of Medicine		(1900)	Utah
University of Texas Department of Medicine		(1924)	Texas

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Yale University School of Medicine		(1924)	N. B. M. Ex.

Book Notices

AN INTRODUCTION TO SURGERY. By Rutherford Morison, M.D., F.R.C.S., M.A., and Charles F. M. Saint, C.B.E., M.D., M.S., Professor of Surgery, Cape Town University, South Africa. Second edition. Cloth. Price, $4.50. Pp. 347, with 183 illustrations. New York: William Wood & Co., 1926.

This deals with the basic principles of surgery. It is essentially a student's textbook, and an excellent one. No man can meet present-day standards of surgery without a comprehensive knowledge of the perversions of physiology and of anatomy. Such problems of regional surgery presented, for instance, in appendicitis, peptic ulcer or cancer depend for their solution on detailed knowledge of such elemental subjects as inflammation, gangrene, ulcer, fistula, and the manner of origin, growth and spread of malignant tumors. The various chapters cover shock, wounds, hemorrhage, infection, gangrene, specific infections, malignancy and allied topics of general surgery. The book, though small, is surprisingly complete; it is systematic and well written. It deserves the attention of instructors in surgery.

L'INSULINE. Par Dr. Émile Aubertin, Chef de clinique médicale à la Faculté de médecine de Bordeaux. Préface du Professeur agrégé P. Mauriac, Médecin des hôpitaux. Paper. Price, 45 francs net. Pp. 490. Paris: Gaston Doin & Cie, 1926.

The author has reviewed much of the voluminous literature stimulated by the discovery of insulin and has performed a service by classifying these contributions simply and clearly. This is probably the most complete review of the subject that has appeared, and it will doubtless remain in France a basic review of the literature on insulin. Clinical researches and observations and experimental studies on normal and depancreatized animals by the author and his colleagues are included. The book is divided into three parts: the discovery, manufacture and nature of insulin; its physiologic properties and mode of action, and its therapeutic utilization. A detailed table of contents is serviceable because of the clear arrangement of material under numerous subtitles; an index is lacking.

FACTS ON THE HEART. By Richard C. Cabot, M.D., Professor of Medicine and of Social Ethics at Harvard University. Cloth. Price, $7.50 net. Pp. 781, with 163 illustrations. Philadelphia: W. B. Saunders Company, 1926.

This work is unique in that its conclusions are based wholly on the study of cases that came to necropsy. The pathologic material was obtained from 4,000 necropsies performed in the Massachusetts General Hospital from 1896 to 1919. Of these, 1,906 were cases of cardiac disease, and in them, 4,143 lesions were studied. Most of the book is made up of illustrative case reports including history and course, physical and postmortem findings, and discussion, a method of presentation of which Dr. Cabot is a master. Practically all that is given as regards treatment is incorporated in these reports. They will be read with interest and profit notwithstanding the introductory suggestion to concentrate on the opening and closing chapters and the section summaries. The author is convinced that most cases diagnosed heart disease by the physician or suspected by the patient are not genuine heart disease. More than 90 per cent of all cases of true cardiac disease were found to belong to a group divided into rheumatic, syphilitic and hypertensive types. Of these the hypertensive type was by far the most frequent (77 per cent of all cases). Mitral stenosis uncomplicated is about twice as common as any other single rheumatic valve lesion; alone or in combination it is about three times as common as all other rheumatic lesions combined. Of mitral regurgitation, diagnosed more frequently than any other lesion, only seven cases were observed in 4,000 necropsies, and of these three were more or less doubtful. This is a most important observation and justifies the conclusion that a clinical diagnosis of mitral leak is not warranted. Of greatest practical importance in this essentially practical volume is the discussion of mitral regurgitation and the lack of significance of systolic murmurs per se. The book, as intimated, contains a wealth of material. It is abundantly illustrated, has a characteristic, pleasing style, and presents facts of great clinical importance.

LEHRBUCH DER SYSTEMATISCHEN ANATOMIE. Von Professor Dr. Julius Tandler, Vorstand der 1. anatomischen Lehrkanzel, Wien. 1. Band, Knochen-, Gelenk- und Muskellehre. Second edition. Paper. Price, 36 marks. Pp. 467, with 352 illustrations. Leipsic: F. C. W. Vogel, 1926.

The original edition of this volume was exhausted in 1923, and the second edition now appears. The third volume of the first edition has yet to be published. The first volume treats of the bones, joints and muscles with clearness and thoroughness. The illustrations are of unusually good quality and unusually instructive. Especially good features are the articles on the mechanical working of the joints. No attempt has been made to incorporate any account of the minute anatomy of the structures considered, and the history of development is reserved for a special section in the last volume. The grouping of muscles, however, is arranged in accordance with their development and innervation, and is thus an improvement on the grouping ordinarily adopted in textbooks of anatomy. The second edition has afforded opportunity for a few slight alterations in the text and for the introduction of four additional illustrations. Students and physicians will find it a sound and reliable textbook.

PSYCHOTHERAPY. Mental Elements in the Treatment of Disease. By Edward Wyllys Taylor, James Jackson Putnam Professor of Neurology in Harvard University. Harvard Health Talks, 14. Cloth. Price, $1. Pp. 53. Cambridge: Harvard University Press, 1926.

This brief volume constituted one of the health talks in the Harvard series. It serves a useful purpose in tracing the development of mental healing from the earliest times, through the periods of miracles, mysticism and religious domination, through charlatanism, including mesmerism and animal magnetism, down to the beginning of scientific methods. Here special reference is made to hypnotism and the work of Charcot, Janet, Freud and Jung. The author is convinced that the freudism development has been of great value. He says, for example: "It may doubtless be demonstrated that the principle of sexual etiology has been misapplied in specific instances, and even that a psychotherapy based upon a sexual foundation may fail in practice; but this cannot destroy the usefulness of the generalization in its broader aspects, nor can it be denied that with all its vagaries and overaccentuation at the hands of certain of its more enthusiastic and uncritical adherents a distinct step in progress has been made by the analytic school." Like many authors who have given special study to this subject, Dr. Taylor feels that psychotherapy must remain in the hands of the medical profession if it is to advance along rational lines. The physician must concern himself with the mind of the patient and the relation of mind to physical diseases.

ARABIAN MEDICINE AND ITS INFLUENCE ON THE MIDDLE AGES. By Dr. Donald Campbell. Volumes I and II. Cloth. Price, $8 per set. Pp. 442. New York: E. P. Dutton & Co., 1926.

The school in the history of medicine headed by Dr. Charles Singer has given us during recent years many valuable contributions. Not the least of these is the present work on Arabian medicine, fitting it into its proper place as the promoter of science after the decline of the Greco-Roman civilization. The author was for some time connected with the British forces in the Far East, and therefore approaches the work with intimate understanding and sympathy. He points out that the Arabians raised the medical profession from a menial position to that of a learned profession; that they were the first to introduce systematically arranged illustrations in their medical writings; that they introduced the idea of legal control of qualifying examinations for admission to medicine, and that they aided the dissemination of Greek culture into a wider field. The two volumes in which these facts are elaborated include records of all the better known Arabian contributors, numerous quotations from Arabic writings, and a complete bibliography of the Latin versions of the contributions of Galen to medicine. For any one interested in medical history or in the special phases of it here concerned, these volumes are especially desirable.

PSYCHOTHERAPIE: Ein Lehrbuch für Studierende und Aerzte. Von Dr. Max Isserlin, Professor an der Universität in München. Paper. Price, 9 marks. Pp. 205. Berlin: Julius Springer, 1926.

Isserlin's contribution to the great, world-wide controversy as to Freud's actual contribution to psychotherapy is a complete outline of the subject based on the courses given since 1910 in the University of Munich. The author believes that the freudian contribution has been an actual one, but that it must not be permitted to depart too far from the basic facts of medicine. The book is divided into sections on suggestion, on mental hygiene, on analytic psychotherapy, and on psychotherapy as applied for the alleviation of special conditionals. The concluding chapter deals with the abnormal constitution and the value of psychotherapy in organic disturbances.

LACTOBACILLUS ACIDOPHILUS. By Nicholas Kopeloff, Ph.D., Associate in Bacteriology, Psychiatric Institute, Ward's Island, N. Y. Cloth. Price, $5. Pp. 211, with illustrations. Baltimore: Williams and Wilkins Company, 1926.

The vicissitudes of sour milk therapy since the time when Metchnikoff first pronounced it a prime factor for the promotion of longevity have been many. Physicians have seen the passing of *Bacillus bulgaricus* into a well defined position not nearly so important as that originally accorded to it. They have also seen the coming on the scene of the acidophilus organism, and read numerous reports that brought its use almost to the status of a panacea. The book by Kopeloff is a well written account of the history of the subject, a review of investigations in the field, and a presentation of original studies by the author and his colleagues. It is, of course, concluded that such therapy has limited uses. *Bacillus acidophilus* is not a panacea, and it will not necessarily prolong life. It has, however, established virtues in the treatment of constipation, diarrhea, and some other less common intestinal disorders. It is the belief of the author that most of the commercial preparations on the market are worthless, and that none of them compare in value with viable milk cultures. The author also points out that lactose feeding is valuable, but that this sugar alone cannot replace acidophilus milk.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

THE DISPENSATORY OF THE UNITED STATES OF AMERICA: Thoroughly revised, largely rewritten and based upon the tenth revision of the United States Pharmacopœia, National Formulary, fifth edition, and the British Pharmacopœia 1914. By Horatio C. Wood, Jr., M.D., Professor of Pharmacology and Therapeutics in the University of Pennsylvania; Charles H. LaWall, Ph.M., D.Sc., Phar.D., Professor of Theory and Practice of Pharmacy in the Philadelphia College of Pharmacy and Science; Heber W. Youngken, Ph.M., Ph.D., Professor of Botany, Pharmacognosy and Materia Medica in the Massachusetts College of Pharmacy; John F. Anderson, M.D., Director of the Research and Biological Laboratories of E. R. Squibb and Son, and Ivor Griffith, Ph.M., Assistant Professor in Pharmacy in the Philadelphia College of Pharmacy and Science. Twenty-first edition. Cloth. Price, $15. Pp. 1792. Philadelphia: J. B. Lippincott Company, 1926.

The pharmaceutical *vade mecum*.

DIE BIOLOGIE DER PERSON. Ein Handbuch der allgemeinen und speziellen Konstitutionslehre. Herausgegeben von Dr. Th. Brugsch, und Prof. Dr. F. H. Lewy. Lieferung 2—Band 1. Spezielle Vererbungslehre. Von Priv. Doz. Dr. G. Just. Individualanatomie. Von Prof. Dr. W. Lubosch. Individualpathologie und Krankheitslehre. Von Dr. G. Mittasch. Person und Infekt. Von Dr. F. Schiff. Paper. Price, 21 marks. Pp. 323-748, with 126 illustrations. Berlin: Urban & Schwarzenberg, 1926.

More parts to another German compilation of knowledge—this one on anatomy and pathology.

ELECTROTHERMIC METHODS (DESICCATION AND COAGULATION) IN THE TREATMENT OF NEOPLASTIC DISEASES: Designed as a Practical Handbook of Surgical Electrotherapy for the Use of Practitioners and Students. By J. Douglas Morgan, B.A., M.D., Instructor in Radiology, University of Pennsylvania Graduate School of Medicine, Philadelphia. Cloth. Price, $2.50. Pp. 172, with 36 illustrations. Philadelphia: F. A. Davis Company, 1926.

Outline of technic with bibliography from which the name of J. F. Percy is strangely absent.

THE CLINICAL EXAMINATION OF THE NERVOUS SYSTEM. By G. H. Monrad-Krohn, M.D., M.R.C.P., M.R.C.S., Professor of Medicine in the Royal Frederick University, Oslo. With a Foreword by T. Grainger Stewart, M.D., F.R.C.P., Physician to the National Hospital for the Paralysed and Epileptic, Queen Square. Third edition. Cloth. Price, $2.50. Pp. 201, with 52 illustrations. New York: Paul B. Hoeber, Inc., 1926.

Latest edition of a competent popular guide to methods of neurologic examination.

DIAGNOSTIK UND THERAPIE DER KINDERKRANKHEITEN, MIT SPEZIELLEN ARZNEIVERORDNUNGEN FÜR DAS KINDESALTER: Ein Wegweiser für den praktischen Arzt. Von Prof. Dr. F. Lust, Direktor des Kinderkrankenhauses (Bad. Landesanstalt für Säuglings- und Kleinkinderfürsorge) in Karlsruhe. Fourth edition. Paper. Price, 10.50 marks. Pp. 508. Berlin: Urban & Schwarzenberg, 1926.

New edition of popular German textbook, the last previous one in 1923.

DIE CHIRURGIE. Eine zusammenfassende Darstellung der allgemeinen und der speziellen Chirurgie. Herausgegeben von Prof. Dr. M. Kirschner und Prof. Dr. O. Nordmann. Lieferung 10. Band V. Die Chirurgie des Magens und Zwölffingerdarms. Von Prof. D. N. Guleke, Prof. Dr. H. Nieden, und Prof. Dr. H. Smidt. Paper. Price, 21 marks. Pp. 361-680, with 101 illustrations. Berlin: Urban & Schwarzenberg, 1926.

The surgery of the stomach and duodenum in monograph form.

DIE TECHNIK DER BLUTGRUPPENUNTERSUCHUNG: Für Kliniker und Gerichtsärzte, nebst Berücksichtigung ihrer Anwendung in der Anthropologie und der Vererbungs- und Konstitutionsforschung. Von Dr. Fritz Schiff, Abteilungsdirektor am städtischen Krankenhaus im Friedrichshain-Berlin. Paper. Price, 6 marks. Pp. 66, with 28 illustrations. Berlin: Julius Springer, 1926.

Technic of studies in iso-agglutination from medicolegal point of view.

DIE BIOLOGIE DER PERSON. Ein Handbuch der allgemeinen und speziellen Konstitutionslehre. Herausgegeben von Prof. Dr. Th. Brugsch, und Prof. Dr. F. H. Lewy. Lieferung 3—Band 1. Konstitution und Rasse. Von Dr. V. Lebzelter. Die Lebensdauer des Menschen. Von Dr. H. Ullmann. Paper. Price, 19.80 marks. Pp. 749-1051, with 10 illustrations. Berlin: Urban & Schwarzenberg, 1926.

This part on race type and the length of life.

REPORTS OF EYE CLINICS AND SLIT-LAMP CLINICS. By L. Webster Fox, M.D., Professor of Ophthalmology, Graduate School of Medicine, University of Pennsylvania. Paper. Pp. 46. Philadelphia, 1926.

PATHOLOGY AND TREATMENT OF THE INFLAMMATORY DISEASES OF THE NASAL ACCESSORY SINUSES. In 2 volumes. By Professor Dr. M. Hajek, Chief of the Laryngo-Rhino-Otological Clinic, University of Vienna. Translated and edited by Joseph D. Heitger, A.B., M.D., and French K. Hansel, M.D., M.S. Fifth edition. Cloth. Price, $17. Pp. 702, with illustrations. St. Louis: C. V Mosby Company, 1926.

A standard reference for specialists in otolaryngology.

EPILEPSY: A Functional Mental Illness, Its Treatment. By R. G. Rows, M.D., Pathologist and Medical Officer, County Mental Hospital, Prestwich, Manchester, and W. E. Bond, M.R.C.S., L.R.C.P., a Senior Medical Officer to the Ministry of Pensions. Cloth. Price, $3. Pp. 138. New York: Paul B. Hoeber, Inc., 1926.

A clinical treatment of epilepsy on the basis that it is an emotional response.

LAWS (ABSTRACT) AND BOARD RULINGS: Regulating the Practice of Medicine in the United States and Brief Statements Regarding Medical Registration Abroad. Revised to June 1, 1926. Thirty-seventh edition. Paper. Price, 80 cents. Pp. 254. Chicago: The American Medical Association, 1926.

Latest edition of a collection of indispensable information nowhere else available.

TABLES ANNUELLES DE CONSTANTES DONNÉES NUMÉRIQUES DE CHIMIE, DE PHYSIQUE ET DE TECHNOLOGIE. Publiées sous le patronage de l'Union de Chimie pure et appliquée par le Comité international nommé par le VII Congrés de Chimie appliquée. Volume V, deuxième partie—années 1917-1918-1919-1920-1921-1922. Cloth. Pp. 1934. Paris: Gauthier-Villars & Cie, 1926.

Tables and constants of atomic properties and electrons.

HANDBUCH DER SPEZIELLEN PATHOLOGISCHEN ANATOMIE UND HISTOLOGIE. Herausgegeben von F. Henke, und O. Lubarsch. Achter Band—Drüsen mit innerer Sekretion. Von W. Berblinger; A. Dietrich; G. Herxheimer; E. J. Kraus; A. Schmincke; H. Siegmund, und C. Wegelin. Paper. Price, 165 marks. Pp. 1147, with 358 illustrations. Berlin: Julius Springer, 1926.

Pathology of the glands of internal secretion.

SURGERY OF CHILDHOOD. By John Fraser, M.C., M.D., Ch.M., Regius Professor of Clinical Surgery in the University of Edinburgh. Two volumes. Cloth. Price, $14 per set. Pp. 1152, with 598 illustrations. New York: William Wood and Company, 1926.

A competent survey of the special problems associated with surgery as applied to small bodies and their deficiencies.

THE MEDICAL, SOCIAL, ECONOMIC, MORAL AND RELIGIOUS ASPECTS OF BIRTH CONTROL. By S. Adolphus Knopf, M.D., Major Med. Off. Res. Corps (Aux.), U. S. Army. Third edition Paper. Price, 25 cents. Pp. 66, with illustrations. New York, 1926.

Discussion and much argument for conditions more ideal than possible of practical realization.

HINTS ON EQUIPMENT AND HEALTH: For Intending Residents in the Tropics. By J. Balfour Kirk, M.B., Ch.B., D.P.H., Medical Officer of Health, Fort Louis, Mauritius. Cloth. Price, 3/6 net. Pp. 120. London: Baillière, Tindall and Cox, 1926.

The information here contained might make the tropics more than endurable.

LABORATORY MANUAL IN GENERAL MICROBIOLOGY. Prepared by the Laboratory of Bacteriology and Hygiene, Michigan State College. Third edition. Cloth. Price, $3.50. Pp. 472, with illustrations. New York: John Wiley & Sons, Inc., 1926.

The second edition, 1921, has been a popular laboratory guide.

CAVERNOUS SINUS THROMBOPHLEBITIS AND ALLIED SEPTIC AND TRAUMATIC LESIONS OF THE BASAL VENOUS SINUSES: A Clinical Study of Blood Stream Infection. By Wells P. Eagleton, M.D., Medical Director, Newark Eye and Ear Infirmary, Newark, N. J. Cloth. Price, $4.50. Pp. 196. New York: Macmillan Company, 1926.

Monographic consideration based on good case reports.

LEHRBUCH DER TOPOGRAPHISCHEN ANATOMIE MIT BESONDERER BERÜCKSICHTIGUNG IHRER ANWENDUNG. Von John Blumberg, Dozent und Vorstand des Chirurgisch-Anatomischen Institutes an der Universität Dorpat (Tartu) in Estland. Paper. Price, 21 marks. Pp. 486, with 152 illustrations. Berlin: Urban & Schwarzenberg 1926.

Beautifully illustrated guide to surgical landmarks.

INJURIES OF THE WRIST: A Radiological Study. By Dr. Étienne Destot. Translated by F. R. B. Atkinson, M.D.C.M. Cloth. Price, $6. Pp. 176, with 87 illustrations. New York: Paul B. Hoeber, Inc., 1926.

First English translation of a French classic radiologic study of the wrist.

ANÉMIE PERNICIEUSE. La cholesterine en bio-pathologie. Par Dr. M.-T. de Gerin, de la Faculté de médecine de Paris. Paper. Pp. 42, with illustrations. Paris: E. le François, 1926.

The author seems to think that cholesterin is the one important substance in cause and cure.

Medicolegal

Privilege and Testimony of Physician in Will Case

(In re Vaughn's Estate (Wash.), 242 Pac. R. 1094)

The Supreme Court of Washington, in affirming a decree sustaining a will which it was contended that the testator lacked the mental capacity to make, says that any definition of testamentary capacity is more or less arbitrary and subject to revision or modification as new combinations of fact arise. Again, it says that it was argued that error was committed in this case in allowing a physician, while testifying, to claim as privileged certain information acquired by him several years before while rendering professional services to the testator. The physician testified with more or less detail of his services at the time referred to, and especially with reference to the testator's mental condition. There was a question with reference to the bodily ailment of the testator that the physician preferred not to answer, and the court does not understand that counsel ultimately insisted on a direct answer to that specific question. However, it did appear that this physician, who saw and conversed with the testator on the day the will was executed, and with whom he was well acquainted, did testify in answer to questions on behalf of the contestant of the will as to what, if any, effect the physical condition of the testator several years before, as found by the physician, had on the mental condition of the testator at the date of the will. This was the ultimate and effective inquiry, and this court thinks there was no error in this regard.

Releases Based on Physicians' Mistakes in Prophecy

(Tucker v. Atchison, T. & S. F. Ry. Co. (Kan.), 243 Pac. R. 269)

The Supreme Court of Kansas says that, while the plaintiff was in the employ of the defendant as a laborer, a skid broke and the end flew up, striking him in the jaw. He received treatment from the defendant's physicians, and within a month executed a release for $75. He continued to receive treatment from the defendant's physicians, and at the end of four months executed another release for an additional amount of $275. Subsequently he brought this action to set aside the second release on the ground of mutual mistake and to recover damages for his personal injuries. He obtained a verdict for $2,500, and entered a remittitur of $350—the amount already received; but judgment on the verdict is reversed by the supreme court, with directions to enter judgment for the defendant, because the court holds that, to justify rescinding a contract or release on the ground of mutual mistake, such mistake must be as to a past or present fact material to the contract, and not a mere mistake in prophecy, opinion or belief relative to an uncertain event, such as probable developments from and permanence of a known injury.

The plaintiff's principal disability at the time of the trial, more than two years after he was injured, was ankylosis or limitation of motion of the lower jaw, difficulty in speaking intelligently, and enlargement and tenderness of the jaw. This condition existed ever since the injury. Whether or not the jaw was broken was never ascertained. Some of the physicians thought it was, others not. The plaintiff said that he did not know which physician was right. He did not know at the time he signed the release or at the time of the trial; from which it clearly appeared that he was not deceived; that he did not sign the release in the belief that his jaw was not broken. No new injuries had developed, nor had the result of the injuries already known been increased or augmented from the time of the second release to the date of the trial. Moreover, the plaintiff admitted that he read this release and knew its contents when he signed it. He apparently placed on one of the physicians most of the responsibility for the belief that his injuries were only temporary. He testified that that physician never did say exactly how long it would be before he would be able to go back to his work, but said all the time, "It was no permanent injury; it would just be a small time and I would be over it," etc. But the supreme court finds it difficult to construe the statements attributed to that physician as more than an expression of opinion. They were not statements of an existing fact, and, when considered in connection with all the other circumstances, did not furnish sufficient basis on which to set aside the contract on the ground of mutual mistake.

No contention was made that the opinion of that physician or the other physicians was given in bad faith, or that it was for the purpose of inducing the plaintiff to make a settlement. If a mistake was made, it was a mistake of prophecy—not of a past or existing fact. If the physician made the statements attributed to him and if the plaintiff believed them, still they were not statements of fact which would sustain a cause of action for rescission. The future duration of the plaintiff's disability was a matter of conjecture, of opinion, of belief, and not of fact.

Penalty Recoverable by Summary Proceeding

(State Board of Medical Examiners v. Roche (N. J.), 132 Atl. R. 86)

The Supreme Court of New Jersey, in dismissing the defendant's appeal from a judgment for the plaintiff, says that, under the amendment of 1921 to the act of 1894, the defendant was prosecuted for the statutory penalty for practicing medicine without the required license, and was convicted in the district court. She appealed to this court apparently on the theory that the proceeding in question was governed by the provisions of the district court act relating to appeals and judgments in that court. On the merits, if they were properly before the supreme court, the judgment would have to be affirmed. The only point made was that a trial by jury was denied after having been demanded. But this point was settled, so far as relates to the supreme court, in *State Board of Medical Examiners* v. *Buettel*, 131 Atl. 89. It was intimated that the amendment of 1921, which for the first time in precise words prescribed that the trial should be without a jury, is unconstitutional as improperly excluding a jury trial; but this court thinks that the contrary is well settled. The action is a special statutory proceeding, committed to a statutory tribunal relating to a statutory offense which was no crime at common law. The matter, however, was not properly before this court, as the judgment in this proceeding was reviewable only by writ of certiorari and not by appeal tantamount to a writ of error. The legislature in 1921, by what was called in the Buettel case a "clear and unequivocal mandate," directed that the trial be without a jury. If the suit had therefore been a civil suit, subject to the jury features of the district court act, the legislature evidently meant it to be thereafter a summary proceeding; for not only is it prescribed that "the court shall proceed in a summary manner without a jury . . . without the filing of any pleadings," but the statutory form of conviction states that "C. D. defendant was . . . convicted . . . in a summary proceding . . . upon a complaint," etc. The case is thus brought within the settled rule that a proceeding in an inferior tribunal and not according to the course of the common law is reviewable exclusively by certiorari, and the practical reason for insisting on its application has been stated to be that, "If certiorari be the only proper method of review, it follows that frivolous and nonmeritorious attempts to remove the record, which appeal, as a matter of right, would facilitate, will be cut off by the timely refusal of an allocatur in certiorari."

The pertinence of this comment was illustrated by the fact that at the instant term there were five appeals of this precise character before this branch of the court.

Evidence of Negligence and of Clips Causing Trouble

(Fowler v. Scheldrup (Minn.), 207 N. W. R. 177)

The Supreme Court of Minnesota, in affirming an order that set aside a verdict apparently directed for the defendant and that granted a new trial, says that this court was asked to determine whether there was evidence to take the case to the jury as to negligence of the defendant and as to whether the plaintiff's trouble was a proximate result thereof. In March, 1920, the defendant, a surgeon, performed an operation on the plaintiff, the following being among the things which he conceded that he did: curettement of the uterus, application of phenol (carbolic acid) and iodine to the inside of the

uterus, opening of the abdomen for other necessary purposes, elevation of the uterus to normal position, elimination of adhesions between the lower part of the large bowel and the uterus, and removal of the appendix and an ovarian tumor. The plaintiff was released from the hospital in April. Three or four weeks later she had a hemorrhage, and was told by the defendant that in the operation he had done everything necessary to prevent such hemorrhages, and could not understand why she should have them. The medicines which he prescribed helped, but hemorrhages continued, occurring about every three weeks and lasting a week or ten days. The trouble remained. The plaintiff continued to use the medicine under the defendant's direction until the fall of 1923. In September of that year she discovered that two metal surgical clips were attached in the cervix, or neck, of the uterus. With this discovery she called at the defendant's office, but he was not there. She then went to another physician and surgeon, who made a vaginal examination and found the clips at the place stated. They were dark, and showed evidence of considerable corrosion. At the point of insertion of the clips there was an erosion of the tissues. The evidence showed that such erosion produced a certain amount of irritation and breaking down of the tissues, which tended to cause bleeding. A week later the plaintiff gave the clips to the defendant, and told him that she thought she had found the trouble which had caused the hemorrhages, and he said, "Oh, no; they would do no harm." After the clips were removed the plaintiff had no hemorrhages. The defendant denied that he used the clips. He denied many of the plaintiff's statements, and said that in his opinion the presence of the clips would not have caused the hemorrhages.

The evidence was sufficient to justify the jury in finding that the defendant inserted the clips and failed to remove them. They were metal. They remained with the plaintiff for more than three years. She suffered. The facts made a prima facie case of failure to exercise care in the removal of the clips after they had served their purpose. This case did not require a finding of lack of skill; merely a want of care. The defendant, as a surgeon, did not attempt to justify the retention of the clips in service for such a length of time. He denied responsibility for their presence. If the jury should find that he was responsible for their presence, the evidence would warrant a finding that they were the proximate cause of the plaintiff's trouble. The evidence was weak as to the hemorrhages resulting from their presence. The fact that the trouble ceased on the removal of the clips was important and persuasive. This court thinks that, under all the circumstances, the evidence was sufficient. The defendant gave his opinion that the presence of the clips would not cause the hemorrhages. But this was a case in which the expert opinion of the defendant was not necessarily controlling. It was for the consideration of the jury.

Death Occasioned by a Fortuitous Event

(Frandila v. Department of Labor and Industries (Wash.), 243 Pac. R. 5)

The Supreme Court of Washington, in affirming a judgment which reversed the action of the department of labor and industries in disallowing the claimant compensation for the death of her husband, says that, while assisting in digging a ditch for a sewer and chopping on a root at the bottom of the ditch, he collapsed and died in about fifteen minutes. The testimony established that the man, who was 60 years of age, was suffering from hardening of the arteries and died from either a rupture of a blood vessel or embolism. The department contended that the death was not occasioned by a fortuitous event, in that there was no unusual strain or exertion, but was occasioned by the hardening of the arteries, a slow, progressive disease which, when sufficiently advanced, produces death under ordinary exertion. The state statute, which provides for compensation where death results from an injury, defines "injury" as referring "only to an injury resulting from some fortuitous event as distinguished from the contraction of disease." The question then was whether the testimony in this case showed a fortuitous event, and the court holds that it did. It was plain from the evidence that the hardened arteries, coupled with overexercise in the course of employment, caused either the hemorrhage or the embolism. The chopping of the root was a definite and particular occurrence which was the contributing, proximate cause of the death.

The question of whether an injury has been the result of an accident or an accident arising out of the employment, which are narrower terms than fortuitous event, has been considered by many courts, and the result of these decisions seems to be that an accident exists when a man undertaking work is unable to withstand the exertion required to do it, whatever may be the degree of exertion used or the condition of the workman's health. Reference to the cases from this court in which the question of fortuitous event has been considered shows that those decisions are in harmony with the ones referred to from other jurisdictions.

The contributing and proximate cause of this workman's death was an unlooked for mishap and untoward event not expected or designed. The exertion necessary to cut the root was the extra weight thrown into the scale with his physical condition which occasioned the injury. It is not necessary in order for a person to recover compensation as an injured workman that he must have been in perfect health at the time he received the injury. That is not the intent of the statute and it cannot reasonably be given any such interpretation. Where a workman, not in perfect health, during the course of his employment, makes an extra exertion, which, in addition to his infirmity, causes an injury, such injury is the fortuitous event and brings him within the operation of the compensation act.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Colorado Springs, Sept. 13-18. Dr. Luther C. Peter, N. E. Cor. Chestnut and 20th Streets, Philadelphia, Secretary.

American Association for Thoracic Surgery, Montreal, Canada, Sept. 30. Dr. Ethan Flagg Butler, Robert Packer Hospital, Sayre, Pa., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Chicago, Sept. 20-22. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.

American Association of Railway Surgeons, Chicago, Nov. 3-5. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American Climatological and Clinical Association, Philadelphia, Sept. 27-28. Dr. A. K. Stone, Auburn Street, Framingham Center, Massachusetts, Secretary.

American College of Physical Therapy, Chicago, Oct. 18-23. Dr. R. W. Fouts, City National Bank Building, Omaha, Secretary.

American College of Surgeons, Montreal, Canada, Oct. 25-29. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Public Health Association, Buffalo, Oct. 11-14. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

Association of American Medical Colleges, Cleveland, Ohio, Oct. 25-27. Dr. F. C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Association of Military Surgeons of the United States, Philadelphia, Oct. 14-16. Col. J. R. Kean, U. S. A., Ret., Army Medical Museum, Washington, D. C., Secretary.

Central States Pediatric Society, St. Louis, Oct. 22-23. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 21-23. Dr. F. B. Stephenson, 460 Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Dover, Oct. 12-13. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Indiana State Medical Association, West Baden, Sept. 22-24. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 18-22. Dr. W. B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.

Kentucky State Medical Association, Frankfort, Sept. 20-23. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Lansing, Sept. 14-17. Dr. F. C. Warnshuis, Grand Rapids National Bank Bldg., Grand Rapids, Sec'y.

Missouri Valley, Medical Society of the, Council Bluffs-Omaha, Sept. 15-17. Dr. Charles Wood Fassett, 115 East 31st St., Kansas City, Mo., Sec'y.

National Tuberculosis Association, Washington, D. C., Oct. 4-7. Dr. George M. Kober, 1819 Eye Street, N. W., Washington, D. C., Sec'y.

Nevada State Medical Association, Reno, Sept. 24-25. Dr. H. J. Brown, Gray-Reid Building, Reno, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 11-14. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southwest, Medical Association of the, Kansas City, Mo., Oct. 11-14. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Vermont State Medical Society, Burlington, Oct. 14-15. Dr. W. G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 12-15. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Western Surgical Association, Duluth, Minn., Oct. 14-16. Dr. H. P. Ritchie, Lowry Building, St. Paul, Secretary.

Wisconsin, State Medical Society of, Madison, Sept. 15-17. Mr. J. G. Crownhart, 153 Oneida Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in North America for a period of three days. Foreign journals prior to 1921 and domestic journals prior to 1923 are not available. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Chicago

9: 489-568 (July) 1926

Angioscotometry. J. N. Evans, New York.—p. 489.
Injuries to Conjunctiva by Spines from Common Burdock. C. E. Munk, Kendallville, Ind.—p. 507.
Traumatic Retinal Detachment Hypertension: Part of Visual Field Retained. H. Beard, Chicago.—p. 510.
Metastatic Carcinoma of Choroid: Two Cases; Four Eyes. C. A. Clapp, Baltimore.—p. 513.
Enucleation of Eyeball Under Local Anesthesia. F. H. Rodin, San Francisco.—p. 517.
New Vessel Formation in Vitreous. H. W. Scarlett, Philadelphia.—p. 521.
Ophthalmic History: Bowman, Donders and Von Graefe. V. J. Schwartz, Minneapolis.—p. 524.
Traumatic Iridodialysis: Spontaneous Recovery. A. Duane, New York.—p. 531.
Massive Exudative Retinitis and Angiomatosis Retinae. D. Alperin, New York.—p. 532.
Luminal Poisoning with Conjunctival Residue. J. H. Roth, Kankakee, Ill.—p. 533.

Annals of Clinical Medicine, Baltimore

4: 851-986 (May) 1926

Training and Equipment of Internist. A. Stengel, Philadelphia.—p. 851.
Obiter Scripta Medica. C. F. Martin, Montreal.—p. 861.
*Roentgen-Ray Examinations of Respiratory Cavities with Lipiodol. J. Forestier, Aix-les-Bains, France.—p. 869.
Physiologic Control: Protoplasmic Basis and Development. C. M. Child, Chicago.—p. 884.
Medical Aspects of Hyperthyroid Conditions. O. P. Kimball, Cleveland.—p. 900.
Diagnostic Pneumothorax. J. J. Singer, St. Louis.—p. 907.
Graded Extrapleural Thoracoplasty. C. A. Hedblom, Chicago.—p. 921.
*Treatment of Abscess of Lung. E. A. Graham, St. Louis.—p. 926.
*Treatment of Thoracic Aneurysm. W. W. Babcock, Philadelphia.—p. 933.
Systemic Expressions of Dental Infections. W. A. Price, Cleveland.—p. 943.

Use of Iodized Oil in Chest Roentgenography.—Forestier has found the injection of lipiodol into the bronchial tree a very harmless mode of examination for diagnostic purposes. It seems to have a therapeutic action in cases of chronic lung suppuration.

Abscess of Lung Associated with Tumor.—In a series of 178 cases of pulmonary suppuration, referred to by Graham, nineteen cases, or 10.7 per cent, have been associated with malignant tumors of the lung.

Treatment of Thoracic Aneurysm.—In cases of thoracic aneurysm, Babcock speeds up the blood current by making a carotid-jugular anastomosis. In the case cited, the distal ends of the internal jugular and common carotid were ligated, and the proximal ends anastomosed end to end. The blood from the right common carotid was therefore immediately returned to the heart. For two or three days after the operation, the patient was in a serious condition from the pulmonary congestion; then a marked fall in blood pressure occurred, with great improvement and relief from pain. Evidence of cerebral degeneration did not develop, and the venous circulation in the right side of the head and neck was much improved. There was no evidence that the blood was driven into the descending vena cava and the liver.

Archives of Neurology and Psychiatry, Chicago

16: 1-130 (July) 1926

Central Visual System. I. Anatomic Projection of Retinal Quadrants on Striate Cortex of Rabbit. T. J. Putnam and I. K. Putnam, Boston.—p. 1.
*Neuromyelo-Encephalitis During and Following Epidemic of Hiccup: Diverse Localization of Streptococci. E. C. Rosenow, Rochester, Minn.—p. 21.
*General Paralysis Treated with Tryparsamide. G. B. Hassin and P. Bassoe, Chicago.—p. 37.
*Blood Calcium and Phosphorus in Personality Disorders: Effect of Ultraviolet Irradiation. G. W. Henry and W. W. Ebeling, White Plains, N. Y.—p. 48.
*Action of Bulbocapnine in Paralysis Agitans and Tremor of Paralysis Agitans Type. H. DeJong, Amsterdam, and W. Herman, Boston.—p. 55.
*Loss of Weight: Importance as Early Symptom in General Paralysis. H. A. Bunker, Jr., New York.—p. 63.
Paralysis of Oculopupillary Sympathetic Fibers and Ophthalmic Division of Trigeminal Nerve, Preceded by Ophthalmic Herpes Zoster: Case. C. S. Potts, Philadelphia.—p. 71.
Uncinate Syndrome. W. G. Spiller, Philadelphia.—p. 73.
*Bilateral Brachial Plexus Palsy. P. Lewin and H. Arkin, Chicago.—p. 75.

Hiccup Causes Neuro-Encephalitis.—Results of experiments in cases of nausea and vomiting, and neuritis and allied conditions that developed during and following an epidemic of hiccup are reported by Rosenow. With few exceptions, the symptoms in the animals paralleled in important respects those in the patients studied. While tremors and spasms of muscles, chiefly of jaws, ears and neck, occurred in nine of twenty-one rabbits injected intracerebrally, spasms of the diaphragm occurred in only three. Two of these were injected with the streptococcus from two patients who had transient hiccup, and the third with the streptococcus from a patient who developed nausea and vomiting in a family in which one member had had a severe attack of hiccup a short time previously. Four dogs, injected with the material from two patients who were severely nauseated and vomited, developed anorexia and vomited repeatedly. Only one rabbit of thirty-two injected with material from four patients in whom lethargy was absent became lethargic, while three of twelve rabbits injected with material from a patient who had lethargy manifested this symptom. Evidence of neuritis was present in five cases studied; correspondingly, hemorrhagic lesions of nerves occurred in eight of twenty-one rabbits injected intracerebrally and in ten of seventeen injected intravenously. Parallelism between patients and animals is further shown by the fact that, of sixteen rabbits injected intracerebrally with the streptococcus from three cases in which there was no evidence of myelitis, only one had gross hemorrhages of the cord or medulla, while of twenty-two injected with material from two patients who had undoubted symptoms of myelitis, nine had gross hemorrhages in the cord. Moreover, of seventy-three rabbits injected intracerebrally with material from twenty-one cases of epidemic hiccup in which search for hemorrhages in nerves and cord was made, only two revealed gross hemorrhages of peripheral nerves, four of nerve roots and six of the spinal cord. In a few instances, lesions containing the streptococcus were found in the stomach or colon following intracerebral inoculation, especially of strains injected after one or two animal passages; this was considered in harmony with the fact that gastro-intestinal symptoms were not uncommon in these epidemics.

General Paralysis Treated with Tryparsamide.—In a case of general paralysis of the insane intensively treated by Hassin and Bassoe with neo-arsphenamine and tryparsamide, marked improvement was shown both serologically and clinically. The inflammatory, mesodermal phenomena were found to be milder than in an average case of general paralysis; they were thus influenced by the treatment. The ectodermal elements, ganglion and glia cells, were not affected by the treatment; neither did the treatment effect the disappearance of the spirochetes.

Blood Calcium and Phosphorus in Personality Disorders.—Calcium determinations were made by Henry and Ebeling on specimens from eighty-eight persons, eleven of whom presented no personality disorder. Phosphorus determinations were made on specimens from sixty-eight persons, seven of whom presented no personality disorder. The calcium and phosphorus content of the blood in personality disorders was within normal limits. In manic states, there was a relative increase in the calcium and phosphorus content. In tense, agitated, depressed states there was a relative decrease in the calcium and phosphorus content. The calcium and phosphorus content in both acute and chronic dementia praecox was unchanged. In dementia praecox, the calcium content was lowest in the catatonic type. The calcium and phosphorus content of the

blood in personality disorders was not affected by ultraviolet irradiation. There appears to be a rational basis for calcium and phosphorus therapy in tense, agitated, depressed states.

Bulbocapnine in Paralysis Agitans.—Four patients, of whom three showed the typical parkinsonian syndrome, and the fourth a tremor of the parkinsonian type but no other signs, were treated by DeJong and Herman with a group of drugs known to have a quieting action on the central nervous system. Of these four patients, two showed a striking amelioration of the tremor after bulbocapnine and two showed a questionable improvement. Two patients showed a striking improvement after scopolamine, and two were entirely refractory to it. All four were refractory to atropine and phenobarbital. Morphine was administered to only one patient, who had responded particularly well to bulbocapnine and scopolamine. It was found to have no effect on the tremors. Judging from the four patients examined, bulbocapnine and scopolamine alone can be regarded as of real therapeutic value. Atropine and phenobarbital are of no value.

Loss of Weight in General Paralysis.—In a series of seventy-four male patients with general paralysis studied by Bunker, loss of weight, often well marked but also often very gradual, was essentially the earliest abnormality noted in twenty-two cases. In sixteen additional cases, loss of weight had definitely taken place but was a later manifestation. In twelve of these thirty-eight cases there was also a history of greatly increased appetite or bulimia, which usually developed some time after the onset of loss of weight, and which was in a few cases successful in counterbalancing to a considerable extent the preceding weight loss. In seven additional cases, in which no known loss of weight had taken place, there was likewise a definite history of bulimia.

Brachial Plexus Palsy.—Lewin and Arkin report a case of bilateral seventh cervical root palsy due to birth trauma. The injury evidently was in the roots of the plexus close to their points of exit from the spinal column, possibly within the spinal canal. The case was one of face presentation.

Archives of Otolaryngology, Chicago

4: 1-96 (July) 1926

*Displacement Irrigation of Nasal Sinuses. A. W. Proetz, St. Louis.—p. 1.
*Mixed Salivary Tumor in Tonsillar Region. A. O. Freedman, Montreal.—p. 14.
Medicolegal Importance of Microscopic Investigation of Temporal Bone. C. A. Heatly, Rochester, N. Y.—p. 28.
Otologic Complications of Basal Skull Fracture. C. F. Yerger, Chicago.—p. 35.
Aphonia: Three Cases. W. R. Watson, Philadelphia.—p. 46.
Comparison of Results Made with Two Types of Audiometer. H. Fletcher, New York.—p. 51.
Bilateral Jugular Resection for Bilateral Sigmoid Sinus Thrombosis (Otitic) Cases. H. Hastings, Los Angeles.—p. 58.
Intradural Complications of Aural and Nasal Origin: Survey of Recent Literature. W. P. Eagleton, Newark, N. J.—p. 69.

Displacement Irrigation of Nasal Sinuses.—A method is presented by Proetz for introducing fluids into the posterior series of accessory nasal sinuses without producing any trauma. By the use of appropriate solutions, it may be employed as a therapeutic agent. By the use of radiopaque oils, it may be used in combination with roentgen rays for diagnosis. It is not a substitute for surgical measures in those cases in which extensive permanent tissue changes have taken place, but may prevent such changes if instituted before they have occurred.

Mixed Tumor in Tonsil Region.—The tumor in Freedman's cases consisted of a mixed variety of tissues, myxomatous tissue, cartilage, osteoid and fat. The tumor was adherent to, but did not spring from, the periosteum of the inner surface of the inferior mandible near the angle. Freedman inclines to the view of Wood that this class of tumor arises from misplaced embryonic mesoblast and epiblast.

Boston Medical and Surgical Journal

195: 107-154 (July 15) 1926

Pediatrics in General Practice. J. Garland, Boston.—p. 107.
Urologic Causes of Abdominal Pain. J. D. Barney, Boston.—p. 111.
*Stethoscopes. W. R. Barss, W. F. Eade, Cambridge, Mass., and E. B Fitzgerald, Boston.—p. 116.

Stethoscopes.—The results of this investigation of stethoscopes by Barss et al. show conclusively that a small air volume and large mouth area are conducive to greatest intensity. There are practical limits that must be placed on the volume and area, so that the exact dimensions for maximum intensity are yet to be determined.

195: 155-202 (July 22) 1926

*Is Ichthyol Useless? J. H. Blaisdell, Boston.—p. 155.
So-Called "Traumatic Neuroses." I. H. Coriat, Boston.—p. 160.
Cholecystography. F. S. Eveleth, Concord, N. H.—p. 165.
Trypanosomiasis: Relative Frequency in United States; Tryparsamide Therapy in Refractory Cases. K. M. Lewis, New York.—p. 167.

Value of Sulphonated Bitumen.—To determine the present status of sulphonated bitumen, N. F., as a remedial agent in the treatment of diseases of the skin, Blaisdell sent a questionnaire to 300 dermatologists. From the 169 replies received, it would appear that a large majority of the dermatologists of the country are using sulphonated bitumen, including the natural and the various synthetic substitutes, and are finding it useful and effective in a large number of skin diseases.

Canadian Medical Association Journal, Montreal

16: 745-876 (July) 1926

Mental Factor in Disease: Treatment by General Practitioner. C. Hunter, Winnipeg.—p. 745.
Biochemistry of Calcium. A. T. Cameron, Winnipeg.—p. 753.
Practical Application of Our Present Knowledge of Calcium Metabolism. A. T. Cameron, Winnipeg.—p. 759.
Some Forms of Anemia. F. G. Finley, Montreal.—p. 765.
Postoperative Pulmonary Complications. N. B. Gwyn, Toronto.—p. 772.
*Oral Administration of Glucose. R. D. Rudolf, Toronto.—p. 778.
Relation of Laboratory to Practice of Medicine. I. H. Erb, Toronto.—p. 781.
Upper Respiratory Infection in Relation to Pulmonary Disease. I. R. Smith, Toronto.—p. 785.
Neisser Infection in Male. H. C. Mersereau, Montreal.—p. 789.
What Anesthesia Records Show. J. A. Blezard, Edmonton, Alta.—p. 794.
Pyelitis in Infancy. H. P. Wright, Montreal.—p. 798.
*Results of Wassermann Tests. H. K. Detweiler, Toronto.—p. 800.
Synergistic Analgesia in Labor. W. J. Stevens, Ottawa.—p. 804.
*Bifurcate Ribs Cause of Deformity of Chest. M. W. Bloomberg, Montreal.—p. 807.
Saphenous Varix Simulating Femoral Hernia. G. G. Miller, Montreal.—p. 808.
Case of Thymoma. J. Miller, Kingston.—p. 810.

Glucose in Malnutrition.—In cases of malnutrition, acute or chronic, Rudolf finds glucose in large amounts by the mouth a valuable method of increasing the available energy and of aiding in the gain of weight, without putting any strain on the digestion or on the organs of excretion. It is scarcely necessary to add that it should not be used if there is any sugar in the urine, and it is well to watch the urine occassionally in patients who are taking it, although it will very seldom be found to give rise to any glycosuria.

Analysis of Wassermann Tests.—In the last ten years, more than 75,000 Wassermann tests have been made in the laboratories of the University of Toronto, in connection with the Toronto General Hospital. The incidence of syphilis in the wards of the hospital has dropped from 10.4 per cent in 1916 to 5.8 per cent in 1925. This drop has been coincident with, and may be due in part to, the development of an efficient outpatient clinic for syphilis. Only 1.1 per cent of the new-born infants in this hospital have a positive Wassermann reaction. Many syphilitic mothers bear nonsyphilitic children. In the special clinic for syphilis in the outpatient department of the Toronto General Hospital, more cases of primary syphilis are being detected now than in former years, but the figures for the new cases of tertiary syphilis remain so high that it becomes very evident that efforts for the education of the general public regarding the dangers of this disease must be redoubled if the victims of infection are to be attracted to the clinics at an early stage of the disease.

Bifurcate Ribs Cause Pigeon Breast.—In Bloomberg's case, two forked ribs produced a slight degree of pigeon breast, a deformity which, he says, is too often classified as solely the result of rickets.

Endocrinology, Los Angeles

10: 105-236 (March-April) 1926

*Neurologic and Endocrinologic Aspects of Ichthyosis, Chronic Indurative Eczema and Minor Forms of So-Called Trophic Changes in Dermal Tissues. F. M. Pottenger, Monrovia, Calif.—p. 105.

*Nondiabetic Glycosuria. H. J. John, Cleveland.—p. 115.
*Treatment of Senile Cataract with Thyroid Extract. W. J. Kerr, G. N. Hosford and H. C. Shepardson, San Francisco.—p. 126.
*Thyroid Apparatus. XXXIV. Rôle in Growth of Hypophysis. F. S. Hammett, Philadelphia.—p. 145.
*Regeneration of Thyroid. J. E. Else, H. M. Grow and C. W. Lemery, Portland, Ore.—p. 165.
Development and Nature of So-Called Toxic Adenomas. A. E. Hertzler, Halstead, Kan.—p. 175.
Goiter: Current Errors in Etiology and Treatment. I. Bram, Philadelphia.—p. 181.
Present Status of Problem on Tryptophan and Thyroid Gland. H. C. Chang, Chicago.—p. 188.
Standardization of Preparations of Ovarian Follicular Hormone. E. P. Bugbee and A. E. Simond, Detroit.—p. 191.
*Effect of Pituitary Preparations on Blood Sugar Curve and Basal Metabolism. K. M. Bowman and G. P. Grabfield, Boston.—p. 201.

Administration of Thyroid in Skin Diseases.—In five cases reported by Pottenger, the administration of desiccated thyroid, 1 Gm. daily, by mouth, and calcium chloride intravenously, 10 cc. of a 5 per cent solution, two or three times weekly, seemed to exert a favorable influence on the skin condition.

Nondiabetic Glycosuria.—Eight cases of nondiabetic glycosuria have been observed by John over periods ranging from two to eleven years, during which the patients have not had diabetes. It is said to be an innocent anomaly requiring no restriction of diet or other treatment.

Thyroid Extract in Senile Cataract.—Kerr et al. feel that better results may be expected in early senile cataract if iodides are used locally in the eye and thyroid substance, or the iodides, is given internally. Of twenty-eight patients so treated, ten showed improvement; ten were unchanged, and eight became worse. No particular type of cataract responded better to treatment than another. For the most part these were advanced cases, in which not much improvement could be expected. The incipient cases are said to offer better hope of cure.

Rôle of Thyroid in Growth of Hypophysis.—A report and an interpretation of the growth relation of the hypophysis to the thyroid apparatus is given by Hammett. The data lead to the following conclusions: 1. Thyroid deficiency conditions a consistent hypertrophy of the hypophysis in the male but not in the female. 2. The size and presumably the activity of the hypophysis is specifically related to the activity of the thyroid when this exceeds the usual limits in either direction. 3. This relationship is conditioned by gonadal incretory activity in the female but not in the male. 4. There is no specific growth relation between the hypophysis and the parathyroids.

Regeneration of Thyroid.—Partial thyroidectomy was performed by Else, Grow and Lemery on sixteen rabbits. It was found that, first, so long as there is a sufficient amount of thyroid gland left to supply the necessary thyroxin to the animal, there are no changes in the gland as the result of removal; second, that when a sufficient amount of thyroid substance is left so that stimulated activity on the part of the cells can supply enough thyroxin, regeneration will not take place and the increased cellular activity is shown only by an increase in colloid; third, that when there is not enough thyroid left to meet the needs of the animal, hyperplasia takes place, developing usually from the interacinar cells of Webber, but also from the intra-acinar cells, and in each case acini are formed.

Effect of Pituitary Preparations on Basal Metabolism.—The experiments made by Bowman and Grabfield confirm previous ones in regard to a slight rise in basal metabolic rate after the administration of pituitary preparations.

Florida Medical Association Journal, Jacksonville

12: 314-343 (June) 1926

Problems in Neurologic Surgery. C. E. Dowman, Atlanta, Ga.—p. 314.
Cholecystography. J. E. Boyd, Jacksonville.—p. 320.
Interpretation of Cholecystograms. W. M. Shaw, Jacksonville.—p. 323.
Cholecystography. L. W. Cunningham, Jacksonville.—p. 325.
Prostatic Hypertrophy. E. T. Sellers, Jacksonville.—p. 328.
Prostatectomy: Transsacral and Caudal Anesthesia; Forty Consecutive Cases. R. B. McIver, Jacksonville.—p. 330.
Granular Calcium Lactophosphate Saccharated. G. R. Plummer, Key West.—p. 333.
Shall Pharmacists Serve Physicians? S. S. Dworkin, New York.—p. 334.

Iowa State Medical Society Journal, Des Moines

16: 299-356 (July) 1926

Liver and Its Cirrhoses. W. J. Mayo, Rochester, Minn.—p. 299.
Tularemia. J. W. Wallace, Des Moines.—p. 302.
Conquest of Cancer. E. H. Skinner, Kansas City, Mo.—p. 305.
Use of Gold in Tuberculosis. J. W. Kime, Fort Dodge.—p. 307.
Heart Disease Versus Tuberculosis: Mortality Statistics. T. J. Edmonds, Des Moines.—p. 308.
Burden on Medical Profession. S. Bailey, Mount Ayr.—p. 309.
Pernicious Anemia: Intravenous Use of Mercurochrome. H. S. Fist, Los Angeles.—p. 310.

Johns Hopkins Hospital Bulletin, Baltimore

39: 1-68 (July) 1926

*Treatment of Early Syphilis. I. Plan. J. E. Moore and A. Keidel, Baltimore.—p. 1.
*Id. II. Clinical Results. J. E. Moore and J. E. Kemp, Baltimore.—p. 16.
Id. III. Wassermann Reaction in Treated Cases. J. E. Moore and J. E. Kemp, Baltimore.—p. 36.
*Irradiated Orange Juice as Antirachitic Agent. H. L. Maslow, D. H. Shelling and B. Kramer, New York.—p. 56.

Treatment of Early Syphilis.—Moore and Keidel present a plan of treatment for early syphilis, the essential features of which are (*a*) that treatment shall be continuous, consisting of courses of arsphenamine alternating with courses of mercury by inunction (or of insoluble bismuth salts intramuscularly) plus potassium iodide; (*b*) that treatment shall be carried out under detailed serologic control; (*c*) that treatment shall be prolonged without intermission for one year after the blood and spinal fluid have become and have remained completely normal.

Results of Treatment of Syphilis.—Moore and Kemp report the clinical results of treatment in 402 patients with early syphilis, of whom forty-two had seronegative primary syphilis, sixty-one seropositive primary syphilis and 299 early secondary syphilis. Under a system of continuous treatment with alternating courses of arsphenamine and mercury, the probability of cure is in direct proportion to the duration and regularity of treatment. Only 10 per cent of those patients receiving eight or less doses of arsphenamine without mercury were cured; when two courses of arsphenamine, plus interim mercury, were given, 37 per cent were cured; after three courses, 56 per cent, and after four or more courses, 78.8 per cent of probable cures were obtained. The optimal amount of treatment for early syphilis with the plan advocated appears to be a full year of treatment after the serology of blood and spinal fluid has become and has remained negative, excepting only in seronegative primary syphilis, in which a three course treatment, lasting nine months, apparently produces satisfactory results. With the utmost cooperation on the part of the patient, and painstaking treatment and follow-up on the part of the physician, it appears possible to cure 100 per cent of patients with seronegative primary syphilis, but only 80 to 95 per cent of those with seropositive primary or early secondary syphilis. The tendency of inadequately treated syphilis to repeated relapses in the same patient is pointed out. Cardiovascular syphilis, especially aortitis, was the most common type of tertiary recurrence observed. The evidence of repeated routine spinal punctures in fifty-four patients permits the general statement that in early syphilis, if the spinal fluid is normal after six months' treatment, the patient will not develop clinical neurosyphilis or a subsequently positive spinal fluid unless a second dissemination of organisms (clinically manifest by recurrent secondary syphilis or a recurrent positive blood Wassermann reaction) occurs. Periodic reexaminations from physical and serologic standpoints are absolute essentials in the evaluation of treatment results.

Irradiated Orange Juice is Antirachitic Agent.—Experiments made by Maslow et al. demonstrate that (1) antirachitic properties can be imparted to orange juice by irradiation with the mercury vapor quartz lamp; (2) after feeding an irradiated orange juice to rachitic rats healing may be demonstrated as early as five days and is almost complete at the end of fifteen days.

Journal of Industrial Hygiene, Baltimore

8: 291-316 (July) 1926

Dust Inhalation by Hematite Miners. A. J. Cronin.—p. 291.
Prevention of Lead Poisoning in Industry. I. India-Rubber Industry. C. L. Klein, Breinsdown, England.—p. 296.
Determinations of Air Dustiness. S. H. Katz and G. W. Smith, Pittsburgh, and W. M. Myers, New Brunswick, N. J.—p. 300.
Effect of Turbulent Air Motion and Humidity on Stability of Dust, Fume and Smoke Clouds. P. Drinker, R. M. Thomson and J. L. Finn, Boston.—p. 307.

Kansas Medical Society Journal, Topeka

26: 207-242 (July) 1926

Rest in Treatment of Pulmonary Tuberculosis. H. C. Goodson, Colorado Springs.—p. 207.
Roentgenographic Evaluation of Pulmonary Tuberculosis Lesions. L. G. Allen, Kansas City.—p. 211.
*Scarlet Fever Epidemic at Lawrence, Kan. N. P. Sherwood and V. M. Auchard, Lawrence.—p. 215.
Foreign Bodies in Air and Food Passages. E. M. Seydell, Wichita.—p. 220.

Analysis of Scarlet Fever Epidemic.—An epidemic of scarlet fever occurring in a fraternity at Lawrence, Kan., is analyzed by Sherwood and Auchard. Apparently it was introduced by a case of tonsillitis contracted at Kansas City, Mo. Five of the twenty members of the fraternity developed scarlet fever and in addition six others mild tonsillitis or pharyngitis. The bacteriologic examinations show definite correlation between the presence of certain hemolytic streptococci and scarlet fever. *Streptococcus hemolyticus* in very large numbers was present in the throat and nasopharynx of one person during the fifth week from onset. The Dick test was done on fifteen contacts and on one who had apparently had the first case of scarlet fever in this epidemic and was apparently a carrier at the time of the test as well as afterward. The latter and four of the contacts gave positive and eleven negative reactions. None of the four contacts showing susceptibility by the skin test developed scarlet fever, although all of them were apparently exposed since all lived in the same house, ate together and in addition one studied with a student during the latter's incubation period and also, with another of the four, ate and slept in the same room with an apparent carrier for one week. Two of them did develop mild tonsillitis; the other two remained well. Of the eleven negative reactors, presumably immune, two developed scarlet fever. The skin reactions and blanching power of their serum was studied in a series of eleven individuals. There was complete agreement in eight and disagreement in three under the conditions of the test. The data suggest that the occurrence of positive skin reactions (Dick tests) in some of the subjects might be a phenomenon of hypersensitiveness. These results also suggest that if *Streptococcus scarlatinae* is the etiologic factor, a local mechanism in the throat and nasopharynx may be a factor in protecting some persons. There was no evidence that a bacteriophage was a factor in the defensive mechanism. Epidemiologic data indicate that the epidemic was essentially one of contact infection.

Kentucky Medical Journal, Bowling Green

24: 239-312 (June) 1926

Medical Management of Thyroid Dysfunction. W. F. Boggess, Louisville.—p. 241.
Management of Benign Prostatism. S. C. McCoy, Louisville.—p. 249.
Surgical Treatment of Troublesome Fractures of Long Bones. J. G. Gaither, Hopkinsville.—p. 253.
Relation of Infection of Nose and Throat to Diseases of Ear. J. D. Heitger, Louisville.—p. 257.
Artificial Pneumothorax Treatment of Pulmonary Disease. O. O. Miller, Louisville.—p. 261.
Operative Treatment of Chronic Infantile Paralysis. O. R. Miller, Louisville.—p. 266.
Diagnosis of Common Types of Skin Diseases. C. B. Wilmott, Louisville.—p. 268.
Obstetrics as Specialty. W. Gossett, Louisville.—p. 273.
Care and Delivery of Pregnant Woman in Her Home. L. T. Minish, Frankfort.—p. 277.
Family Doctor. B. C. Frazier, Louisville.—p. 290.
Lethargic Encephalitis. W. A. Gardner, Louisville.—p. 298.

Medical Journal and Record, New York

124: 61-128 (July 21) 1926

Failures and Success in Radiotherapy of Cancer. H. B. Philips, New York.—p. 61.
Acute Pericarditis. H. Elwyn, New York.—p. 67.
Gynecologic Operation in Insanity. E. McDonald, Philadelphia.—p. 71.
Case of Rat Bite Fever in New Jersey. M. de Fronzo, Newark, N. J.—p. 73.
Brain Diseases. J. W. Shuman, Los Angeles.—p. 75.
Treatment of Gonorrheal Arthritis by Vasotomy. G. Greenberg, New York.—p. 76.
Abscess of Parotid Gland Following Acute Membranous Tonsillitis. A. Lobell, New York.—p. 79.
Preclinical Period and Prophylaxis of Diabetic Gangrene. H. S. Stark, New York.—p. 80.
Dislocation of Carpal Semilunar Bone: Eight Cases. E. D. McBride, Oklahoma City.—p. 82.
Hepatic Depressor Principle and Its Oral Administration in Hypertension. H. R. Harrower, Glendale, Calif.—p. 83.
*Incidence of Pulmonary Complication Following Ether and Ethylene-Ether Anesthesia for Surgical Procedures in Upper Abdomen. J. S. Lundy, Rochester, Minn.—p. 87.
Clinical Effects on Gastro-Intestinal Tract Abnormalities of Portal Circulation. J. F. Montague, New York.—p. 93.
*Diagnostic Value of Anacidity. H. R. Hartman and W. W. Sager, Rochester, Minn.—p. 96.
Incidence and Prognosis of Hemorrhage as Complication of Gastroduodenal Ulcer. S. D. Manheim, New York.—p. 98.
Gallstones. E. L. Kellogg, New York.—p. 100.
Maimonides' Treatise on Poisons. L. J. Bragman, Syracuse.—p. 103.

Comparative Efficacy of Ethylene-Ether and Ether.—In order to establish a statistical basis for the comparison of ethylene-ether and ether in their efficacy and their effect on postoperative pulmonary complications and mortality, the results in two parallel series of 600 cases have been tabulated by Lundy. To make the two series analogous, each operation under ethylene-ether had a corresponding operation under ether, the site of the operation being similar, and the date and meteorologic conditions identical in each pair. The most favorable results in this series, from the point of view of anesthesia, postoperative pulmonary complications and mortality, were secured in the cases of gastric ulcer when ethylene-ether was used, and in the cases of cholecystitis without cholelithiasis when ether was given. The best results, from the point of view of anesthesia and the incidence of postoperative pneumonia in duodenal ulcer, followed the preoperative administration of morphine and atropine and ethylene-ether anesthesia. The net results, from the point of view of anesthesia, postoperative pulmonary complications and mortality, in cases of cholecystitis, whether or not there was an associated cholelithiasis, followed the use of ether without preliminary medication. Anesthesia was satisfactory in 85 per cent of cases on the average. The relative percentages in the ethylene-ether group and in the ether group varied in the different operations.

Diagnostic Value of Anacidity.—Hartman and Sager assert that the chances for and against the presence of pernicious anemia, gallbladder disease, or carcinoma, in a case of anacidity, are about even; the chances of either pernicious anemia or carcinoma being present are about one in three. Carcinoma is rare when free hydrochloric acid is present.

Missouri State Medical Association Journal, St. Louis

23: 237-284 (July) 1926

Infantile Paralysis Epidemic in Kansas City in 1925. R. L. Diveley, Kansas City.—p. 237.
Accidental Hemorrhage in Pregnancy. F. P. McNalley, St. Louis.—p. 238.
Postnatal Retrodisplacement of Uterus. W. Kerwin and J. Berman, St. Louis.—p. 241.
Endocervicitis: Prevention and Early Treatment by Cautery. F. B. Campbell, Kansas City.—p. 242.
Medical Testimony in Criminal Trials. G. W. Robinson, Kansas City.—p. 244.
Tests for Liver Function. W. A. Myers, Kansas City.—p. 250.
Ovarian Cyst Complicating Pregnancy: Cases. T. R. Ayars, St. Louis.—p. 252.

New York State Journal of Medicine, New York

26: 627-660 (July 15) 1926

Mental Health of School Children. W. A. Howe, Albany.—p. 627.
Doctors Need Health Viewpoint. F. A. Sherman, Albany.—p. 631.
Control of Common Communicable Diseases at Cornell University. A. G. Gould, Ithaca.—p. 632.
Epithelioma of Face and Buccal Cavity. J. O. Wetzel, Ossining.—p. 634.
Strangulated Inguinal Hernia in Infants. F. S. Wetherell, Syracuse.—p. 640.
Treatment of Acute Gonococcus Urethritis in Male. A. E. Man, New York.—p. 642.

Northwest Medicine, Seattle

25: 341-398 (July) 1926

*Liver Function Tests: Clinical Value. K. Winslow and W. E. Gibb, Seattle.—p. 341.
Newer Methods in Treatment of Diseases of Heart. F. A. Willius, Rochester, Minn.—p. 348.
*Fractures of Upper Extremity: Treatment. W. A. Taylor, Ellensburg, Wash.—p. 355.
Fractures of Leg. H. E. Cleveland, Burlington, Wash.—p. 361.
Normal and Abnormal Epiphyses. C. E. Koenig, Seattle.—p. 365.
Bone Sarcoma. H. W. Stone, Boise, Idaho.—p. 370.
Brodie's Abscess: Two Cases. R. A. Quigley, Everett, Wash.—p. 374.
Effect of Exercise on Circulation, Sugar Metabolism and Other Factors. B. Gordon, Philadelphia.—p. 376.
Hemorrhagic Smallpox: Ten Cases. J. A. Weber and F. H. Douglass, Seattle.—p. 379.
Progress in Blood Transfusion. L. L. Nunn, Seattle.—p. 381.

Value of Liver Function Tests.—Winslow and Gibb favor the indirect van den Bergh reaction but point out that in differential diagnosis all liver function tests are still of doubtful value. In three cases of metastatic cancer they failed to obtain dye retention, even in the most extensive liver involvement. In atrophic portal cirrhosis, retention of bromsulphalein in the blood was marked in some cases but wholly absent in others, so that absence of dye retention does not exclude a diagnosis of portal cirrhosis.

Treatment of Fractures.—Taylor advocates the use of the fluoroscope in reduction of fractures; in brachial plexus anesthesia in fractures of the arm; in early accurate reduction and early mobilization and the more general use of physiotherapy methods in after-treatment.

Oklahoma State Medical Association Journal, Muskogee

14: 168-208 (July) 1926

Medical Cooperation. A. S. Risser, Blackwell.—p. 168.
History of Obstetrics. R. M. Anderson, Shawnee.—p. 173.
General Practitioner. C. T. Hendershot, Tulsa.—p. 176.
Duodeno-Arteriomesenteric Ileus. F. A. Hudson, Enid.—p. 178.
Nasal Obstruction in Early Life. J. W. Beyer, Tulsa.—p. 183.

Physical Therapeutics, Baltimore

44: 363-416 (July) 1926

Electrocoagulation and Desiccation of Surface Malignancies. T. H. Plank, Chicago.—p. 363.
*Clinical Action of Diathermy. F. DeKraft, New York.—p. 368.
Roentgen-Ray Therapy of Uterine Hemorrhage and Fibroids. M. L. H. A. Snow, New York.—p. 375.
*Endothermy and Combined Therapy in Dermatology. G. M. MacKee and J. J. Eller, New York.—p. 391.

Diathermy Has Tonic Effect.—DeKraft asserts that diathermy, properly applied to the head in moderate dosage, has a general tonic and reconstructive effect on the entire system, in addition to its purely local effect. Because of its action on the sympathetic and the autonomous nervous system, certain definite clinical effects ensue in disorders of the circulatory apparatus and also in other states of disordered function resulting from pathologic changes of different degrees.

Endothermy and Roentgen Ray for Keloid.—MacKee and Eller report a case of rapid cure of a large keloid by the combined use of the endotherm knife and small doses of roentgen rays, and a case of removal of a cavernous angioma from the occipital region of the scalp of a baby by the use of bipolar endothermy.

Quarterly Review of Biology, Baltimore

1: 315-464 (July) 1926

Abnormal Sexuality in Animals. I. Genotypical. F. A. E. Crew, Edinburgh.—p. 315.
Human Types. R. B. Bean, Charlottsville, Va.—p. 360.
Biology of Host-Parasite Relationships Among Protozoa Living in Man. R. W. Hegner, Baltimore.—p. 393.
Maturation Divisions in Relation to Segregation of Homologous Chromosomes. E. E. Carothers, Philadelphia.—p. 419.
Eleven Thousand Generations of Paramecium. L. L. Woodruff, New Haven, Conn.—p. 436.

Surgery, Gynecology and Obstetrics, Chicago

43: 1-128 (July) 1926

*Trigon of Bladder as Factor in Urinary Obstruction. F. Hinman and M. B. Wesson, San Francisco.—p. 1.
*Arthroplasty on Hip: Forty-Eight Cases. W. C. Campbell, Memphis, Tenn.—p. 9.
*"Tenosuspension" for Habitual Dislocation of Shoulder. M. S. Henderson, Rochester, Minn.—p. 18.
*Combined Intra-Uterine and Extra-Uterine Pregnancy. E. Novak, Baltimore.—p. 26.
*Tendency to Acidosis in Toxemia of Pregnancy. W. E. Levy, New Orleans.—p. 38.
*Intradermal Salt Solution Test in Normal and Toxemic Pregnancies: Diagnostic and Prognostic Aid. A. F. Lash, Chicago.—p. 40.
Surgery of Gallbladder. W. J. Mayo, Rochester, Minn.—p. 46.
*Carcinoma of Rectum and Sigmoid. A. W. Jacobs, New York.—p. 50.
Ureteral Stricture: Seventy-Six Cases. A. H. Peacock and R. F. Hain, Seattle.—p. 54.
Value of Enterocolostomy Combined with Enterostomy in Acute Peritonitis. J. W. Long, Greensboro, N. C.—p. 61.
*Pathologic Fracture in Charcot's Disease of Hip Joint. A. Thomas, Denver.—p. 66.
*Concurrence of Tuberculosis and Cancer of Breast. L. W. Smith and R. L. Mason, Boston.—p. 70.
*Carcinoma and Epithelioma in Persons Under Twenty-Six Years of Age. L. H. Fowler, Rochester, Minn.—p. 73.
Conservative Cesarean Section by Lower Uterine Segment Incision. J. M. M. Kerr and J. Hendry, Glasgow, Scotland.—p. 85.
Technic of Cardiolysis. V. Schmieden, Frankfort-on-the-Main, Germany. —p. 89.
Technic of Equalizing Leg Length. R. O. Ritter, Chicago.—p. 93.
*Two-Flap Incision for Cancer of Breast. R. R. Smith, Grand Rapids, Mich.—p. 95.
*Determining Patency of Fallopian Tubes at Laparotomy. J. E. Miles, New York.—p. 97.
Pressure Bags for Skin Grafting. F. Smith, Grand Rapids, Mich.—p. 99.
Prolongation of Local Anesthesia. G. de Takats, Chicago.—p. 100.
Conservative Treatment of Cervical Erosions with Electrocoagulation. F. M. Mikels, Long Beach, Calif.—p. 105.

Trigon of Bladder Causes Urinary Obstruction.—Hinman and Wesson report four cases in which hypertrophy of the interureteral ridge resulted from chronic vesical irritation and produced obstruction to urination. The treatment is surgical by suprapubic cystotomy and (1) either incision of the ridge with suture and ligature of the incised edges to control hemorrhage, or (2) resection of the ridge and the supratrigonal pouch with restoration of the base of the bladder, which is the preferable method when these pouches are deep.

Arthroplasty on Hip.—In nine of sixteen arthroplasties of the hip with unilateral ankylosis reported by Campbell, the result was excellent; it was fair in two cases and doubtful in one case. In two cases there was a recurrence of the ankylosis. Of the thirteen arthroplasties of the hip with bilateral ankylosis, four were failures; four patients had excellent motion in one hip; one had slight motion in both hips; two died of acute sepsis and in one case the result is unknown.

Tenosuspension for Habitual Shoulder Dislocation.—Henderson follows Joseph's technic, except that he uses a full thickness of the peroneus longus muscle, instead of fascia lata. He does not favor capsulorrhaphy.

Combined Intra-Uterine and Extra-Uterine Pregnancy.—Thirty-two cases of combined simultaneous intra-uterine and extra-uterine pregnancy are collected by Novak from the literature, from 1913 to the present. These include two new cases observed by the author. These, added to the 244 cases collected by Neugebauer in the literature from 1708 to 1913, bring the total to date up to 276.

Blood Chemistry in Toxemia of Pregnancy.—Levy has studied the blood chemical determinations in fifty cases of preeclamptic toxemia. He asserts that the toxin of eclampsia produces definite destruction of the liver lobules. The destruction of liver substances causes a derangement of the carbohydrate metabolism and glycogen storage. The blood sugar and carbon dioxide combining power are lowered. A state of acidosis is either imminent or present. The rational treatment is with dextrose or dextrose and insulin. The total elimination of protein from the diet of this type of patient is not only nonessential but also undesirable. The fats are the elements that should be eliminated.

Intradermal Salt Solution Test in Pregnancy.—The intradermal salt solution test was made by Lash in forty-seven normal pregnant women at term to ascertain the normal disappearance time during pregnancy, and in forty-six women (including seventeen eclamptic patients) with the late toxemias of pregnancy. The disappearance time of the solu-

tion in normal pregnant women was longer in the negro than in the white. This racial difference can possibly be explained by the thicker skin in the negro. The women with the toxemias of pregnancy showed definitely decreased disappearance time, more marked in those with convulsions. The degree of decrease in the disappearance time varied directly with the degree of severity of the toxemia, increasing with the general clinical improvement. The same factor or group of factors that produces the edema, hypertension and albuminuria in the late toxemias of pregnancy apparently produces the condition in the tissues that give a decreased disappearance time.

Treatment of Carcinoma of Rectum and Sigmoid.—It is evident, from the comparative study made by Jacobs of the patients treated by radical surgery and by colostomy, that the longest postoperative duration of life was obtained when consultation and diagnosis were made early and followed by radical surgery. The majority of cases of carcinoma of the rectum are recognized when it is too late to accomplish much by radical surgery. To give a good surgical result, the diagnosis must be made early. Surgical statistics in the more advanced cases are not encouraging. It is in those cases that the proper combination of surgery and radiotherapy can accomplish something toward the alleviation of symptoms and the control of the growth of the neoplasm. Radium, when properly applied, will bring about a definite inhibitory and destructive effect in the majority of rectal neoplasms. In selected cases radiation should be used before and after operation. Deep roentgen-ray therapy should also be given in the pelvis with the hope first, of destroying or decreasing the amount of lymphatic tissue, and thus decreasing the opportunity for metastasis; and second, of destroying or inhibiting the growth of metastatic nodules.

Treatment of Fracture in Charcot's Disease of Hip Joint.—Thomas's case is said to show that a good functional result can be obtained in fractures of the hip joint with tabetic arthropathy in which the same mechanical treatment is carried out as in fractures of the femoral neck occurring in normal bone.

Concurrence of Tuberculosis and Cancer of Breast.—A case of associated tuberculosis and carcinoma of the right breast in a woman, aged 38, is reported by Smith and Mason, without clinical evidence of any other associated tuberculosis. The literature is reviewed, indicating that there are only eighteen other cases that can lay claim to proof of concurrence of the two diseases. The obvious theoretical conclusions are that the two conditions either occur independently or are dependent on each other, in this case the tuberculosis apparently being superimposed on a scirrhous carcinoma.

Carcinoma and Epithelioma in Young Persons.—One hundred and twelve patients less than 26 years of age, with pathologically demonstrated carcinoma and epithelioma, were studied by Fowler. There were eighty-nine cases of carcinoma and twenty-three of epithelioma. The youngest patient was 1 year of age. The total known mortality was more than 50 per cent (18.7 per cent could not be traced). Only 14.2 per cent are alive more than three years after operation. Nearly every organ in the body has been the seat of carcinoma in the young. The rectum and ovary were most frequently involved (fourteen cases each); carcinoma of the rectum had the highest known mortality (85.7 per cent), with no patient known to live longer than one year. The other organs involved were as follows: stomach in nine cases; testis, lip, cervix, each in five cases; miscellaneous, in thirty-nine cases. Anemia is a feature of carcinoma of the right half of the colon in youth, as in adult life. Involvement of the neighboring lymph nodes in carcinoma of the breast and large intestine in youth reduces postoperative life and increases the ultimate mortality. In youth, carcinoma in the thyroid is usually found by the pathologist and not by the surgeon; it is intracapsular and its mortality is low.

Two Flap Incision for Breast Cancer.—The incision described by Smith begins at about the middle of the clavicle, extends downward and outward to the edge of the pectoralis major, proceeds along its edge to a point near the breast itself, then passes toward the middle line and around the inner side of the breast. Instead of encircling the breast, however, it proceeds straight downward, parallel with the sternum to a point well over the edge of the ribs and the upper part of the rectus muscle. It then curves sharply outward and proceeds for several inches to a point that allows sufficient mobilization of the lower flap. A second incision encircles the breast, beginning at the edge of the pectoralis major and passing around the outer side of the breast, then toward the median line to meet the first one. These flaps are raised; the edges of the incision are everywhere well undermined, and the removal of the breast with all of the fascia, muscle, and axillary contents proceeds as in all breast amputations for cancer.

Determining Patency of Fallopian Tubes.—Miles describes his modification of Rubin's technic to determine whether gas or air can be introduced through one or both of the tubes. The method determines whether one or both tubes are open, or the site of constriction, at a time when constructive surgery can be applied.

Texas State Journal of Medicine, Fort Worth

22: 167-234 (July) 1926

Treatment of Acute Mastoiditis. J. T. Crebbin, New Orleans.—p. 182.
Telescopic Spectacles and Magnifiers. R. K. Daily, Houston.—p. 187.
Results Attained Through Federal Supervision of Water Supplies Used in Interstate Traffic. A. F. Allen, Washington, D. C.—p. 189.
Public Health Nursing and Medical Profession. E. Vaughan, St. Louis. —p. 194.
State Psychiatric Institute: Prerequisite to Development. V. D. Thomas, Terrell.—p. 197.
Chorio-Epithelioma. E. B. Rogers, El Paso.—p. 199.
Arteriosclerosis and Allied Conditions. I. L. Van Zandt, Fort Worth. —p. 203.
Early Diagnosis of Syphilitic Aortitis. J. Kopecky, Galveston.—p. 205.
Pericarditis with Effusion. B. F. Smith, Houston.—p. 209.
Cervix Uteri of Parous Women. B. O. Works, Brownsville.—p. 212.
Present Status of Cancer Problem. W. S. Bainbridge, New York.—p. 214.

U. S. Naval Medical Bulletin, Washington, D. C.

24: 461-698 (July) 1926

Selection of Personnel for Submarines. R. F. Jones.—p. 461.
Specialism in Navy Medical Corps. N. J. Blackwood.—p. 476.
Botanizing in Haiti. E. L. Ekman.—p. 483.
Supply Table of Medical Department, U. S. Navy. A. B. Montgomery. —p. 497.
Early Treatment of Facial Injuries. L. W. Johnson.—p. 508.
Lethargic Encephalitis. H. M. F. Behneman.—p. 515.
*Data on Culebra. W. A. Bloedorn and E. Hakansson.—p. 534.
Activities at U. S. Naval Hospital, Newport, R. I., During "Mackinac" Disaster. C. E. Riggs.—p. 544.
Food History and Protein Sensitization Tests in Epilepsy. L. H. Roddis. —p. 553.
Seven Thyroidectomies. G. F. Cottle.—p. 557.
Cholecystography with Sodium Tetraiodophenolphthalein. C. M. Shaar. —p. 562.
*Congenital Polycystic Kidney. E. B. McGregor.—p. 571.
Rabies: Animal Experimentation. J. B. Logue and O. B. Morrison, Jr. —p. 574.
Dislocation of Head of Fibula. W. W. Hall.—p. 577.
Treatment of Multiple Fractures of Bones of Face. M. W. Mangold. —p. 580.
Anemia, Splenic (Banti's Disease). A. J. Toulon.—p. 581.

Barracuda Not a Poisonous Fish.—Bloedorn and Hakansson take the stand that the barracuda in good health is not a poisonous fish, and that all cases of barracuda poisoning reported in the literature and in the wardroom were due either to disease or to postmortem change. In view of the fact that the barracuda is an important food fish in many parts of the world and one frequently caught in the fleet, it becomes important to establish the facts in regard to the poisonous qualities of this fish. The authors and others suffered no inconvenience from eating barracuda at Culebra over a period of five months. It is important to gut the fish soon after it is caught and then keep it frozen in a refrigerator until prepared for food.

Congenital Cystic Kidney.—The case reported by McGregor was not recognized until necropsy. The first symptom that brought the patient to the attention of a medical officer was a cerebral hemorrhage, and he died a couple of hours after admission to the hospital.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Biochemical Journal, London

20: 447-649, 1926

*Kidney Function. I. Rate of Filtration and Reabsorption in Human Kidney. P. B. Rehberg.—p. 447.
*Id. II. Excretion of Urea and Chlorine Analyzed According to Modified Filtration-Reabsorption Theory. P. B. Rehberg.—p. 461.
Determination of Chlorine in Blood and Tissues by Microtitration. P. B. Rehberg.—p. 483.
Carbohydrate Metabolism. I. Utilization of Dihydroxyacetone by Animal Body and Method for Its Estimation. W. O. Kermack, C. G. Lambie and R. H. Slater.—p. 486.
Color Reactions Attributed to Vitamin A. F. H. Carr and E. A. Price.—p. 497.
Stone Cells of Pear. C. Dorée and E. C. Barton-Wright.—p. 502.
Kinetics of Hemolytic Systems. I. E. Ponder.—p. 507.
Vitamins (A, B and C) of Papaya. C. D. Miller.—p. 515.
Action of Reducing Agents on Antiscorbutic Factor Inactivated by Aeration. C. G. Daubney and S. S. Zilva.—p. 519.
Action of Hypochlorites on Amino-Acids and Proteins. N. C. Wright.—p. 524.
Hydrolysis of Asymmetric Esters by Lipase. E. R. Dawson, B. S. Platt and J. B. Cohen.—p. 533.
*Antirachitic Properties of Irradiated Sterols. O. Rosenheim and T. A. Webster.—p. 537.
Equilibrium Between *l*-Aspartic Acid, Fumaric Acid and Ammonia in Presence of Resting Bacteria. J. H. Quastel and B. Woolf.—p. 545.
Carbohydrate Metabolism. I. Relation Between Optical Activity and Reducing Power of Normal Blood Filtrates. II. Interaction of Muscle Tissue, Insulin and Glucose. A. B. Anderson and A. Carruthers.—p. 556.
Comparsion of Various Methods of Obtaining Ash-Free Pectin. A. M. Emmett.—p. 564.
Phosphates in Nonirritable Muscle. J. T. Edsall.—p. 569.
Relation of Enzymes Trypsin and Pepsin to Their Substrates. G. E. Briggs.—p. 574.
*State of Calcium in Body Fluids. J. Marrack and G. Thacker.—p. 580.
Reducing Substances Found in Alcoholic Extracts of Brain. E. G. Holmes and B. E. Holmes.—p. 595.
Effect of Benzene and Benzene Derivatives on Sulphur Metabolism of Dog III. E. H. Callow and T. S. Hele.—p. 598.
Id. IV. Mechanism of Mercapturic Acid Formation in Dog. H. I. Coombs and T. S. Hele.—p. 606.
Degradation of Glucose by Blood Corpuscle of Rabbit. J. T. Irving.—p. 613.
*Relative Sensitivity of Benzidine and Phenolphthalein Tests for Blood. A. D. Stammers.—p. 620.
Difference in Chemical Composition of Skeletons of Young Rats Fed (1) on Diets Deprived of Fat-Soluble Vitamins and (2) on Low Phosphorus Rachitic Diet, Compared with Those of Normally Nourished Animals of Same Age. H. Chick, V. Korenchevsky and M. H. Roscoe.—p. 622.
*Influence of Diet and Sunlight on Amount of Vitamin A and Vitamin D in Milk Afforded by Cow. H. Chick and M. H. Roscoe.—p. 632.

Kidney Function.—The filtration-reabsorption theory is discussed by Rehberg, and the different ways in which a diuresis may be obtained according to the filtration-reabsorption theory are enumerated.

Kidney Function.—The filtration-reabsorption theory and especially the way in which it distinguishes between threshold and no-threshold substances is discussed by Rehberg. The difference between active reabsorption and mere back-diffusion is emphasized and a working hypothesis is put forth. The excretion of urea and chlorine is analyzed in two series of experiments according to this hypothesis.

Antirachitic Properties of Irradiated Sterols.—Rosenheim and Webster state that cholesterol is rendered antirachitic by exposure to sunlight as well as to other sources of ultraviolet rays. By irradiating cholesterol in the absence of oxygen, he finds that the stability of the "activated" cholesterol is considerably increased. An amorphous substance which prevents rickets in rats in doses of $\frac{1}{100}$ mg. per day has been separated from "activated" cholesterol by precipitating the cholesterol with digitonin. Both the secondary alcohol group and the unsaturated carbon linkage of the sterol molecule must be intact for the production of antirachitic properties by ultraviolet rays.

Calcium in Body Fluids.—Marrack and Thacker report on their studies on the state of calcium in the body fluids, as follows: Calcium forms an unionized compound with proteins; the formation of this compound accounts for the so-called indiffusible calcium of serum. The calcium of body fluids is partly in the form of calcium ion and partly in the form of unionized protein compound. The calcium ion concentration of plasma is slightly higher than the calcium concentration of cerebrospinal fluid. The calcium ion concentration of body fluids is not regulated by the solubility of calcium carbonate and calcium phosphate. Epilepsy is not caused by a reduction of calcium ion concentration in body fluids.

Relative Sensitivity of Blood Tests.—Stammers has found the phenolphthalein reagent, when used with blood diluted with water alone, from ten to thirty times as sensitive as the benzidine reagent; and the phenolphthalein reagent, when used with urine containing blood, is from three to four times as sensitive as the benzidine reagent. The reagent also gives satisfactory results when used for the detection of occult blood in feces.

Influence of Diet and Sunlight on Vitamin in Milk.—Experiments have been made by Chick and Roscoe, in continuation of those of Luce, in which a cow has been kept under varied conditions of diet and light and the milk obtained tested for its content of (growth-promoting, antixerophthalmic) vitamin A and of (growth-promoting, antirachitic) vitamin D. The vitamin A content of the milk was found to be dependent on the diet of the cow, being at a maximum when the cow received a winter feed of cereals and roots. The degree of exposure of the cow to sunlight had no influence on the vitamin A value of the milk. The antirachitic value of the milk (vitamin D content), on the other hand, was found to depend principally on the degree of isolation of the cow. At the same time there was some indication that the diet of the cow, if consisting of fresh green food, was a contributory factor. These experiments confirmed those of Luce in showing that "pasture-fed" milk possessed the maximum antirachitic value, while that yielded by the cow when receiving a diet of cereals and roots appeared on the whole inferior in this respect, in spite of exposure to maximum illumination out of doors in summer. The milk contained the maximum amount of both fat-soluble vitamins, A and D, when the cow was out at pasture in summer. Attention is called to the disadvantage of confining milch cows in stalls, when the milk is required for the nutrition of infants and young children.

Brain, London

49: 157-255 (June) 1926

*Combined Disease of Pyramidal and Extrapyramidal Systems: New Syndrome. J. Lhermitte and D. McAlpine.—p. 157.
Lymphorrhages in Muscles in Exophthalmic Goiter. L. S. Dudgeon and A. L. Urquhart.—p. 182.
Deep Sensibility. O. M. Duthie.—p. 187.
*Abscess of Spinal Cord. H. W. Woltman and A. W. Adson, Rochester, Minn.—p. 193.
Decerebrate Rigidity of Sloth. C. P. Richter and L. H. Bartemeier.—p. 207.
Colloidal Paraffin Reaction in Cerebrospinal Fluid. A. M. Critchley.—p. 226.

Combined Disease of Pyramidal and Extrapyramidal Systems.—A brief résumé is given by Lhermitte and McAlpine of conditions in which signs of both pyramidal and extrapyramidal disease occur. A case is described in which clinically there appeared rigidity with akinesia, choreiform movements and signs indicating a pyramidal tract lesion, and, pathologically, alterations in the corpus striatum, especially in the putamen, with slight degeneration of both pyramidal tracts. This syndrome is differentiated both clinically and pathologically from other conditions resembling it. The physiopathologic basis of chorea is briefly discussed.

Abscess of Spinal Cord.—To the twenty-nine cases of spinal cord abscess already on record, Woltman and Adson add one case. The patient was a girl, aged 11. The diagnosis in this case was meningomyelitis with spinal block. The chief symptom was spasticity and almost complete paralysis of the legs. There was no pain. Owing to the progression, the establishment of a level and the evidence of block, laminectomy of the sixth, seventh and eighth dorsal vertebrae was performed. When the cord was incised along the posterior median septum, the fluid contents of the encapsulated abscess, about 1.5 cm. in length, escaped. The fluid revealed was pus; no organism could be found on staining; there was no growth on blood

agar, but a slight growth of staphylococci appeared in dextrose broth; inoculation of two guinea-pigs with the pus did not cause infection. The patient eventually made a complete recovery. In only one of the other twenty-nine cases on record did the patient survive.

British Medical Journal, London

2: 51-102 (July 10) 1926

*Angina Minor. J. Hay.—p. 51.
*Place and Function of Tuberculosis Dispensary. R. Philip.—p. 55.
Hypoglycemia Due to Insulin in Children. G. A. Harrison.—p. 57.
Aid to Radiography of Maxillary Antrum. B. McKelvie.—p. 58.
*Pinning Fractured Ulnar Styloid Process in Colles' Fracture. F. J. Hathaway.—p. 59.
*Congenital Absence of Pectoral Muscles. H. W. Jones.—p. 59.
Value of Anatomic Detail. R. K. Shearer.—p. 60.
Huntington's Chorea. F. Back.—p. 60.
Poisoning by Tobacco Applied to Skin. J. N. Deacon.—p. 61.
Blood Vessels of Human Skin. T. Lewis.—p. 61.

Angina Minor.—Hay reviews the clinical history of angina minor and reports briefly nine cases, three being of the eccentric type.

Function of Tuberculosis Dispensary.—The need for long supervision of those affected with tuberculosis is emphasized by Philip. He says that, by continued observation on ambulant patients and on those who have undergone sanatorium or other institutional treatment, the dispensary has proved how essential is the prolonged maintenance of such supervision and how valueless may be the result of short periods of residential treatment. By a sound system of domiciliary visitation, the dispensary has succeeded in reforming homes and households, in reducing the effects of unhealthy environment and in recreating insanitary houses after the image of the sanatorium. In this direction the dispensary's educational value to a community through doctor and nurse can hardly be overestimated.

Treatment of Colles' Fracture.—Many patients who have suffered Colles' fracture complain, months afterward, far more of weakness of the wrist joint and pain over the ulnar styloid process than of the radial fracture. A roentgen-ray examination in these cases shows that this is caused by a fracture and separation of the ulnar styloid process. Although the fractured radius may be accurately replaced yet, if roentgen-ray examination shows the styloid process of the ulna to be still separated, Hathaway insists that open operation should be performed in order to get good bony union of the fractured surfaces, and not the fibrous union that would otherwise result. It is by this means that pain and weakness of the wrist-joint can be prevented. Hathaway drives an ordinary straight bayonet-shaped needle through the fragment into the lower end of the ulna in a direction downward and slightly toward the flexor and radial side of the forearm. When the needle has been driven sufficiently far to fix the styloid fragment, it is cut off with wire clippers, the fascia replaced, and the wound sewn up.

Congenital Absence of Pectoral Muscles.—The case described by Jones was that of a girl, aged 13, with absence of the pars sternocostalis of the pectoralis major and the pectoralis minor on the right side. There was considerable hypertrophy of the clavicular portion of the pectoralis major and of the deltoid on that side. The breast on the right side was absent, and the ribs in that position were merely covered over with skin and subcutaneous tissue. There was no loss of power on the affected side, owing to hypertrophy of the deltoid and clavicular part of the muscle.

Glasgow Medical Journal

106: 1-80 (July) 1926

Water: Its Physiologic Significance. E. P. Cathcart.—p. 1.
Alcohol Injection in Trigeminal Neuralgia. G. Dalziel.—p. 15.
Neuralgias of Head: Trigeminal Neuralgia. J. R. Learmonth.—p. 22.
*Case of Sacrococcygeal Chordoma. J. A. M. Cameron.—p. 38.

Sacrococcygeal Chordoma.—Cameron reports the case of a married woman, aged 59, who had a large tumor occupying the internal aspect of the sacrum and lower lumbar vertebrae, probably of about three years growth. Pain and swelling of the limbs and the lower abdomen were the principal features; no involvement of the bladder or rectum occurred. Death was due to pulmonary embolism. The tumor, microscopically, was found to be a chordoma presenting these characteristic features: alveolar arrangement of true notochordal cells with mucoid degeneration; in parts, like the notochord in a second month's fetus, in others, with degeneration so advanced that only a few nuclei were seen in a matrix of mucin; vacuolation of nuclei and vacuoles apparently independent of cytoplasmic changes, the former containing glycogen, the latter a glycoprotein mucin. This tumor is usually of slow growth, and the more benign it is the more mucin it contains; metastases are rare. Surgical intervention is likely to be more useful than treatment by roentgen rays, and partial removal may delay development for a long period.

Irish Journal of Medical Science, Dublin

7: 297-344 (July) 1926

Subacute Combined Degeneration of Spinal Cord. D. A. MacErlean.—p. 301.
Contraction vs. Retraction Ring in Labor. G. W. Theobald.—p. 318.
Two Cases of Lymphosarcoma of Lung. T. J. O'Donnell.—p. 324.
Exomphalos in Infant. D. F. Cannon.—p. 326.

Journal of Biochemistry, Tokyo

6: 101-260 (April) 1926

Influence of Neutral Salts on Potential of Glycocol Solution Against Hydrogen Electrode. S. Kawai.—p. 101.
Studies on Water Purification. IV. Adsorption of Neutral Salts by Kambara Earth. S. Oikawa.—p. 117.
Chemical Composition of Laiche of Hemifusus Tuba Gmel. Y. Komori.—p. 129.
Influence of Bile Acids on Albumin Metabolism in Salivary Glands and Significance of Choleic Acid. R. Karasawa.—p. 139.
Relationship of Nicotinic Acid to Picric Acid and Picrolic Acid. Y. Sendju.—p. 161.
Comparative Chemistry. III. Behavior of Nicotinic Acid in Organism of Mammals and Birds. Y. Komori and Y. Sendju.—p. 163.
Behaviour of o-Nitrobenzaldehyde, o-Aminobenzaldehyde and Anthranil in Animal Organism. T. Hosoda.—p. 171.
Phosphorus Distribution in Muscle and in Liver Under Various Conditions Especially Under Influence of Hormones. Y. Oda.—p. 179.
Action of Parasympathetic Poisons on Blood Sugar: Parasympathetic Hyperglycemia. T. Sakurai.—p. 211.
Rapidity of Sedimentation of Erythrocytis and Plasma Albumin Displacement in Animals Injected with India Ink. S. Tsunekawa.—p. 237.

Journal of Laryngology and Otology, Edinburgh

41: 421-492 (July) 1926

Influence of Blood Pressure Alterations on Experimental Vestibular Nystagmus. Y. Meurman.—p. 421.
Paths of Infection to Brain Meninges and Venous Blood Sinuses from Neighboring Peripheral Foci of Inflammation. II. A. L. Turner and F. E. Reynolds.—p. 442.
Foreign Bodies in Nose. D. Guthrie.—p. 454.
Papilloma of Larynx with Complete Aphonia of Eleven Years' Duration. J. M. Baxter.—p. 458.

Journal of Pathology and Bacteriology, Edinburgh

29: 225-324 (July) 1926

*Enterococcus. S. V. Bagger.—p. 225.
Epithelial Tumor in Spleen of Rabbit. N. D. Ball.—p. 239.
*"Oat Celled Sarcoma" of Mediastinum. W. G. Barnard.—p. 241.
*Case of Polyarteritis Acuta Nodosa. J. Gray.—p. 245.
Receptor Structure of Vibrio Cholerae (V. Comma): Variations in Cholera-Like Organisms. I. Balteanu.—p. 251.
*Third Agglutinating System in Human Blood. F. W. Simson.—p. 279.
Nutritive Requirements of Growing Cells. T. B. Heaton.—p. 293.
Complement Fixation with Bilharzia: Failure to Produce Anaphylaxis with Cercarial Extract Used in Test for Mammalian Bilharziosis. A. W. Turner.—p. 307.
Carcinoid Tumor of Ileum with Metastases. C. Dukes and P. L. Mummery.—p. 308.
Influence of Locally Injected Indian Ink Suspensions on Intracutaneous Response to Vaccinia and Other Viruses. J. C. G. Ledingham.—p. 309.
Combination of Bismuth and Sodium Sulphite Affording Enrichment and Selective Medium for Typhoid-Paratyphoid Groups of Bacteria. W. J. Wilson and E. M. M. Blair.—p. 310.

Enterococcus.—Enterococci isolated from peritonitis (ninety-two strains) and from normal intestines (fifty-eight strains) have been examined by Bagger. It is moderately pathogenic to rabbits and mice but not to guinea-pigs. There is no demonstrable toxin.

Oat Cell Sarcoma of Mediastinum.—Barnard asserts that the so-called "oat-celled sarcoma" of the posterior mediastinum is a medullary carcinoma of bronchi.

Polyarteritis Acuta Nodosa.—Gray relates the case of a boy, aged 12, who scratched his left knee and within nine weeks was ill with symptoms of sepsis in the thigh. Roentgen-ray examination did not show any bone or joint changes. A blood culture at this stage gave no growth. The swelling and pain gradually subsided, but at the end of a month the temperature remained elevated and the patient's condition was evidently steadily deteriorating. He did not complain of much pain, but the leg was stiff and flexed and there was some pain and stiffness in other joints as well. A blood culture gave a growth of *Staphylococcus albus* only; a catheter specimen of urine proved sterile. After nine weeks of illness, the patient seemed as usual and did not appear to be in any immediate danger, but was suddenly found dead in bed. Death was evidently due to rupture into the peritoneal cavity of a saccular aneurysm of the cystic artery. Further examination revealed the presence of a number of aneurysmal dilatations in other parts of the body and marked arterial changes in the intrahepatic branches of the hepatic artery, the smaller branches of the renal arteries and the coronary arteries. The aorta, the superior mesenteric artery and the hepatic artery appeared to be healthy, as did all the larger branches of the aorta. Both coronary arteries were thickened and tortuous, showing on the heart surface as prominent tortuous white cords, with bluish thrombus-filled spherical nodules here and there along their course. These nodules were of aneurysmal nature. On cross section at various points, the cut surface of the artery was frequently almost solid and very white, with a minute, usually eccentric, lumen. The largest aneurysm was nearly as large as a coffee bean and lay on the right coronary artery near its origin. Nothing was found in the left thigh, in either the bone or the glands.

Third Agglutinating System in Blood.—The work done by Simson confirms the observations of others, that a third pair of agglutination elements exists in human blood.

Journal of State Medicine, London

34: 373-434 (July) 1926

Immunization in Certain Infectious Diseases. S. M. Copeman.—p. 384.
Relation of Animal Diseases to Man at Home and Abroad. P. Bassett-Smith.—p. 397.
Statistical Characteristics of Pulmonary Silicosis. E. L. Collis.—p. 401.
Relationship Between Modern University and Community in Public Health. J. G. Adami.—p. 405.
Concerning Nature of Malignancy. J. G. Adami.—p. 413.
Smokeless Atmosphere. W. B. Smith.—p. 422.

Medical Journal of Australia, Sydney

1: 689-718 (June 19) 1926

British Medical Association and Statecraft. J. E. F. Stewart.—p. 689.
Cerebral Vascular Lesions. H. W. Moxon.—p. 690.
Sequelae of Lethargic Encephalitis. H. F. Maudsley.—p. 696.
Pseudomyxoma Peritonei. M. V. Southey and R. Webster.—p. 703.
Case of Pseudomyxoma Peritonei of Appendiceal Origin in Female. W. G. Cuscaden.—p. 704.

1: 719-738 (June 26) 1926

Occipitoposterior Position. A. J. Gibson.—p. 719.
Breech Delivery. H. A. Ridler.—p. 728.

Okayama Medical Journal, Okayama, Japan

437: 611-722 (June) 1926

Adsorption of Drugs Wrought by Various Kinds of Adsorbents. Y. Takahashi.—p. 611.
So-Called Dormant Cells of Cornea. K. Hudii.—p. 666.
Grape Sugar and Gastric Secretion. M. Kobayashi.—p. 683.
Comparison of Goat Hemolysins with Forssman Antibodies. J. Kageyama.—p. 691.

South African Medical Record, Cape Town

24: 265-288 (June 26) 1926

Survey of One Thousand Consecutive Dermatologic Cases. H. M. Bosman.—p. 266.
Pyorrhea. C. Marais.—p. 271.
Dental Disease and Its Influence on Health and Development of Child: Prenatal Stage. S. Winer.—p. 274.
Birth to Six Years of Age. J. H. C. Davis.—p. 276.
Six Years Old or School Age. H. J. Barclay.—p. 278.
Prenatal Stage. A. M. Geddes.—p. 280.
Birth to Six Years of Age. J. P. Duncan.—p. 281.

Annales de Dermatologie et de Syphiligraphie, Paris

7: 321-384 (June) 1926

*Erythroderma from Arsenical Treatment. E. Jeanselme et al.—p. 321.
Wassermann Test Performed with Chancre Fluid. M. Kitchévatz.—p. 332.

Itching Eruption, Bronzing and Horny Skin of Arsenical Origin.—A pregnant woman, aged 19, was treated with neo-arsphenamine for suspected syphilis. The day after her delivery she developed a severe erythroderma of the face, neck, trunk and thighs, followed first by hyperkeratosis and then by bronzed pigmentation of the skin of the neck and shoulders. The occurrence, simultaneous with the eruption, of the horny transformation of the skin, testified to arsenical poisoning. The latter may have been favored by pregnancy, and especially delivery. Histologic examination revealed that the skin follicles were particularly involved in the inflammatory process. There was considerable alopecia, with destruction of hair bulbs and papillae, and even of sebaceous glands.

Bulletins de la Société Médicale des Hôpitaux, Paris

50: 1101-1154 (June 25) 1926

*Antitoxin and Chloroform in Treatment of Tetanus. A. Ravina.—p. 1103.
Tardy Congenital Tabes. H. Dufour et al.—p. 1104.
*Serotherapy Plus Chloroform in Tetanus. H. Dufour et al.—p. 1106.
Insufficiency of Venules and Tuberculids. G. Delater and R. Hügel.—p. 1108.
*Urticaria from the Sun's Rays. Pasteur Vallery-Radot et al.—p. 1116.
By-Effects of Prolonged Insulin Treatment. M. Labbé.—p. 1123.
Familial Hematemesis and Melena. Cassapian.—p. 1130.
Skin Pigment and Ultraviolet Rays. A. C. Guillaume.—p. 1133.
*Hereditary Hemorrhagic Angiomatosis. P. Emile-Weil.—p. 1135.
Treatment of Abscess of the Liver. P. A. Petridis.—p. 1140.
Peritonitis from Rupture of Hepatic Abscess. Petridis.—p. 1145.
Case of Exophthalmic Goiter, Myxedema and Scleroderma. Pasteur Vallery-Radot et al.—p. 1149.

Chloroform as Adjuvant in Serotherapy of Tetanus.—Ravina's patient, a man aged 26, developed an extremely severe generalized tetanus, ten days after a punctured wound of the foot. Suppuration of the wound required clearing out of the focus, forty-eight hours after the onset of the tetanus, and under the chloroform anesthesia used for this operation, 40 cc. of tetanus antitoxin was reinjected by lumbar puncture. The lockjaw, contractions and respiratory hindrance improved markedly the next day. Two further intraspinal injections were made two days apart, under the same anesthetic. A total of 200 cc. of tetanus antitoxin, and 120 Gm. of chloroform was used. Complete recovery occurred in sixteen days. The favorable influence of chloroform on the course of tetanus in this case, was beyond question, Ravina says. No phenomena of serum sickness occurred.

Serotherapy of Tetanus plus Chloroform.—Good and rapid results from the association of chloroform with intraspinal injections of antitoxin were noted by Dufour, Widiez and Castéran in a case of tetanus following ten days after injury to the thumb, in a man, aged 30. A subcutaneous injection of 10 cc. of "purified tetanus antitoxin" twenty-four hours after the onset of symptoms was followed the next day by 20 cc. beneath the skin and 10 cc. into the cerebrospinal fluid. There was no improvement. Then, under chloroform anesthesia, 15 cc. of the antitoxin was injected intraspinally, and 20 cc. subcutaneously. Marked relief was noted the same day. Subcutaneous injections alone were given for the next four days. Recovery followed. There were no serum reactions. It seems that the antibodies of the antitoxin may influence the toxins in the nervous tissue more intensively and more rapidly under the modified cellular metabolism due to chloroform. It is probable that chloroform may also lower the resistance of the nerve cells to antitoxins, spontaneously elaborated in the patient's organic fluids or supplied by the injected antitoxin.

Urticaria from Sunlight.—Pasteur Vallery-Radot, Blamoutier, Besançon and Saidman treated a woman, aged 44, who developed regularly an urticarial eruption on any part of the body, under the action of the sun's rays. The characteristic patches occurred in from one to ten minutes; they disappeared usually after ten or fifteen minutes, persisting a few days if the exposure was prolonged or repeated. The mucous mem-

branes were never affected. No anaphylactic manifestations appeared in the personal or family history of the patient. Neither hemoclastic crises nor disturbances of endocrine glands seemed to be responsible for the sensitization to sunlight. Electric light, roentgen rays and various mechanical irritations remained without effect. The pathogenesis of this sun urticaria is obscure. Autohemotherapy and different local applications were without avail.

Familial Hemorrhagic Angiomatosis.—One of Emile-Weil's patients, a woman, aged 36, presented, besides progressive obesity, numerous angiomas, developing within the last six years. The angiomas, about thirty in number, the size of a large pin head, were located on the face and lips. Six small angiomas were on the tongue, and a few bright red spots on the body. There were also varices of the legs. Bleeding from the nose was frequent. Similar lesions occurred in the mother, a sister, a brother and an aunt. A grandfather suffered from recurring epistaxis. The other patient, a woman, aged 43, presented similar phenomena. Angiomas or hemorrhages occurred in a grandfather, father, brother, two sisters, an uncle and a cousin. In both patients, the bleeding time was normal, coagulation retarded. Personal or familial disturbances of the liver as well as blood changes of the hemocrasic type were manifest in both instances. Familial hemorrhagic angiomatosis apparently presents an analogy to hemogenia.

Comptes Rendus de la Société de Biologie, Paris

94: 1109-1172 (May 7) 1926. Partial Index

Development of the Vascular System of the Spleen and Liver. E. Barta. —p. 1122.
Cultivation of Lung Tissue Outside the Organism. L. Binet and C. Champy.—p. 1133.
*Properties of Zinc Salts. A. Lumière and H. Couturier.—p. 1166.
*Action of Epinephrine on Intestinal Muscles. Tournade et al.—p. 1171.

Zinc Salts as Inhibiting Coagulation. — Lumière and Couturier repeat their previous statement that the inhibiting action of zinc sulphate on coagulation is twenty-fold stronger than that of sodium citrate (0.05: 100 and 1: 100, respectively). Their further research on guinea-pigs showed that sodium citrate is at least twice as toxic as the zinc salt. Therefore, it seems that the latter might be advantageously used in certain blood transfusions instead of citrating the blood. On the other hand, while the citrate promotes the coagulation of blood in vivo, the zinc salt prevents coagulation both in vivo and in vitro. Consequently the citrate may be preferable in certain hemorrhages as, for instance, in hemophilia.

Physiologic Epinephrinemia. — Tournade, Chabrol and Perrin-Terrin's experiments on dogs tend to demonstrate that while the normal suprarenal secretion stimulates the contractions of the heart and vessels, it reduces the motility of the intestine. In particular, it weakens the intestinal tonus and contractions, although it does not induce paralysis.

94: 1173-1220 (May 14) 1926. Partial Index

*Spirochetes in Laryngeal Papillomas. P. Séguin and P. Logeais.—p. 1189.
*Antivirus Filtrate in Treatment of Glanders. K. Svetkoff and A. Veller. —p. 1191.
*Blood Groups in Infants. R. Debré and M. Hamburger.—p. 1196.
*Hermaphrodism and Antagonism Between Sex Glands. H. Seemann. —p. 1218.

Spirochetes in Papillomas of the Larynx.—Séguin and Logeais found spirochetes in papillomas of the larynx in three cases. They remark that they may have proceeded from the mouth. The question arises whether spirochetes play a rôle in the pathogenesis of the laryngeal papilloma.

Antivirus in Treatment of Glanders.—Svetkoff and Veller have prepared an antivirus filtrate with streptococci obtained from animals with severe glanders. During an epizootic, sixteen horses were treated with subcutaneous injections of from 50 to 100 cc. of the filtrate. In five horses treated at an early stage, the initial increase in the fever was followed by rapid defervescence and disappearance of all morbid manifestations. There were no complications. Entirely favorable results were obtained also in the horses treated at a later stage. The course of the disease was the same as usual in the control horses injected with ordinary bouillon.

Blood Groups in Infants.—In only fifty-six of eighty-seven cases did the blood group of the infant correspond to that of the mother. Examination for agglutinogens and agglutinins was made in fifteen cases. In two-thirds of them the infant's blood corresponded to one of the four blood groups in adults. A total lack of agglutinins was noted in one third of the cases, a partial in one case. Their results correspond to those of Happ, and they disagree with Decastello and Sturli who believe that the appearance of agglutinins precedes that of agglutinogens. There may be a certain analogy between partial absence of agglutinins in the infant's blood and the "intermediary blood groups" in adults in which the characteristic group substances are partially lacking.

Experimental Hermaphrodism and Antagonism Between the Sex Glands.—Seemann inserted one or two ovaries in the abdominal muscles of three guinea-pigs with normal testes. A certain amount of suprarenal capsule extract was added to the food, from five days before the operation till fifteen days after it. The nipples increased in size and there was periodic secretion of milk from about four months after the transplantation. On necropsy the testes appeared intact, while the ovaries had undergone sclerotic degeneration. The longest period of observation was twelve months. It is possible that certain organs which seem to be related to the sexual glands, as, for instance, the suprarenal capsule, may induce a humoral condition similar to that after castration.

94: 1221-1280 (May 21) 1926. Partial Index

*Action of Insulin or Pituitary Extract on Respiratory Metabolism. C. Heymans and H. Pupco.—p. 1253.
Intravenous Versus Subcutaneous Injection of Insulin. Lamers.—p. 1259.

Antagonistic Action of Insulin and Pituitary Extract on Respiratory Metabolism.—Heymans and Pupco's experiments on rabbits showed that pituitary extract not only suppresses the hypoglycemia caused by insulin, but also increases the elimination of carbon dioxide, which is retarded in insulin hypoglycemia. The inhibiting influence on the action of insulin on glycemia and metabolism is, however, less pronounced from pituitary extract than from epinephrine.

Lyon Chirurgical

23: 273-428 (May-June) 1926

"Red" Myoma of the Uterus. M. Patel and A. Vachey.—p. 273.
*Phlebitis and Appendicitis. G. Bolognesi.—p. 290.
Putti-Parham's Osteosynthesis. F. Ody.—p. 296.
Secondary Osteomyelitis of the Skull. Gaillard and Mounier.—p. 334.

Inflammation of Left Femoral Vein and Appendicitis.—Bolognesi observed four cases of this phlebitis in 462 patients with appendicitis; namely, about 1.15 per cent. In two instances, the phlebitis followed an acute attack; in two, it occurred a few days after removal of the appendix for chronic appendicitis. The age of the patients ranged between 17 and 28; three were women. Tuberculous infection seems to have been a predisposing factor; the specific lesions preceded or coincided with the phlebitis in all. The anatomic condition of the left external iliac vein explains the more frequent occurrence of the phlebitis on the left side. The course of the vein is longer and more oblique on this than on the opposite side, and therefore the circulation is more likely to be sluggish here.

Presse Médicale, Paris

34: 849-864 (July 7) 1926

*Blood Transfusion After Roentgen-Ray Treatment. R. Benda and R. Le Clerc.—p. 851.

Blood Transfusion in Persons Treated with Roentgen Rays.—Benda and Le Clerc observed fatal shock following blood transfusion, although the preliminary test indicated compatibility of the bloods. This occurred in a cachectic woman, aged 68, with myeloid leukemia, treated first by roentgen rays (exposure of the spleen), later by injections of thorium X. It would seem that under the influence of the radiotherapy, the patient's blood may have acquired some abnormal properties, responsible for the misleading result of the test. The blood of thirty patients was examined before and from two to eight weeks after roentgen-ray treatment. In two, it changed from

one group to another; these were patients with myeloid leukemia, whose spleen was irradiated. They emphasize that only the direct test of the blood by Jeanbrau's technic can avert errors in similar cases, testing serum from the donor in the presence of blood corpuscles from the receiver, and vice versa.

Revue Française de Pédiatrie, Paris

2: 1-124 (April) 1926

*Pyelitis in Infants. E. Gorter.—p. 1.
Blood Diseases in the New-Born. E. Stransky.—p. 26.
Blood Pressure in Children. L. Garot and Schwers.—p. 36.
*Sclero-Edema in the New-Born. P. Woringer.—p. 63.

Pyelitis in Infants.—Gorter states that there are no characteristic signs of the disease except excessive paleness and swelling of the face. It is the examination of the urine which resolves all doubts. The microbes in the urine belong chiefly to the paracolon bacillus group. It seems that the bacilli rarely penetrate into the renal pelvis by the urethral route, the infection being chiefly hematogenous. In his typical cases the pyelitis disappeared without any traces after one or two weeks. Coexistence of a congenital malformation in the urinary apparatus seemed to be responsible for the chronic form of the disease. The mortality was nil among the fifty-three children over one year; it did not pass 10 per cent in the sixty-one below this age. Large doses of alkaline citrates seemed to influence favorably the course of the pyelitis. Colon bacillus vaccines helped in certain cases, as well as daily irrigation of the bladder with a 0.1 per cent silver nitrate solution.

Localized Sclero-Edema in the New-Born.—Woringer has observed within the last three years six cases of sclero-edema of the suprapubic region, sometimes spreading to the external genitals, abdominal wall or thighs. The infants were all boys, born before term. The affection lasted from four weeks to five months. The prognosis is good; cure occurred without any treatment. No connection between the edema and an infection could be established; suppuration of the umbilical wound was noted in only one case, infection of the genital organs in none. No signs of syphilis could be detected. Thus the pathogenesis of the edema is still obscure. It is elastic, but not enough to retain the imprint of the finger.

Revue Neurologique, Paris

1: 513-720 (May) 1926

Pharmacologic Tests for Vegetative System. G. Marinesco and O. Sager.—p. 513.
*Lethargy in Tumor of the Infundibulum. A. Souques et al.—p. 532.
Double Idiopathic and Congenital Athetosis. L. Syllaba and K. Henner.—p. 541.
Postencephalitic Syndrome in Children. L. Tchlenoff and N. Toulaeva.—p. 563.

Lethargy as Isolated Manifestation of Infundibular Tumor.—Lethargy was the prevailing symptom in Souques, Baruk and Bertrand's fatal case of cancer localized in the infundibular recess of the third ventricle. The woman, aged 37, did not develop glycosuria or polyuria. The disease had started with melancholic depression, about six months before. This was soon followed by paroxysmal headache, with clonic contractions lasting for five minutes. The last two or three months the woman had periods of uncontrollable desire for sleep. The latter phenomenon, also diplopia and slight fever, appeared to justify the previous diagnosis of epidemic encephalitis. Lethargy, associated with disturbed nutrition, adiposis and Argyll Robertson pupil, was observed in another patient with syphilitic lesions of the third ventricle and at the base of the brain. Both cases seem to indicate that the region of the infundibulum and tuber cinereum may play a part in the regulation of sleep.

Schweizerische medizinische Wochenschrift, Basel

56: 633-656 (July 3) 1926

Paratyphoid and Enteritis. W. Silberschmidt.—p. 633.
Anatomy. H. Strasser.—p. 636.
*Return to Drugs. A. Tschirch.—p. 637.
*Standardization of Digitalis. A. Jaquet.—p. 639.
*Abscess of Lungs. O. Roth.—p. 641.
Arsphenamine Reagent. A. Hirsch.—p. 647.
Magnesium Sulphate. F. Paravicini.—p. 649.
Perineum Suture. H. Koller-Aeby.—p. 650.

Return to Drugs.—Tschirch has been pleading since 1909 for better knowledge and utilization of whole drugs.

Standardization of Digitalis.—Jaquet emphasizes the difficulties of biologic standardization. It gives only approximate results. The dosage varies individually in patients. The only important point is to prevent the sale of an inactive drug.

Abscess of Lungs.—Roth reports good results with Singer's method (restriction of fluids) in treatment of several patients with metapneumonic abscesses of the lungs. The secretion diminishes remarkably when the fluids are restricted temporarily to 400 cc. daily. It should not be forgotten that fruits consist chiefly of water.

Archivio Italiano di Urologia, Bologna

2: 517-628 (May) 1926

*Hypernephromas. G. Tarozzi and E. Forti.—p. 517.
*Kidney Tumor with Congenital Syphilis. R. Rinaldi.—p. 582.
*So-Called Essential Hematuric Nephritis. P. Barco.—p. 602.
Case of Kinking of Ureter. I. Barcaroli.—p. 615.
*Spinal Anesthesia in Urology. R. Broglio.—p. 621.

Hypernephromas.—Tarozzi and Forti conclude from their study of the literature on hypernephroid tumors of the kidneys that Grawitz' theory as to their suprarenal origin applies at most only to certain rare, circumscribed forms. In a case they describe, the growth had invaded the vena cava and right auricle. They compare with this a case of renal adenocarcinoma, insisting on the identical results of cytologic and histologic examination in the two. Eleven photomicrograms confirm this.

Kidney Anomalies in Congenital Syphilis.—Rinaldi states that the nephrectomy was borne well by the girl, aged 16, whose adenosarcoma of embryonal type had developed rapidly. The kidney vessels and connective tissue showed also chronic lesions of inflammatory nature from the congenital syphilis.

Hemorrhagic Nephritis.—The hematuria was the only symptom in Barco's case, but nephrectomy revealed diffuse although minimal lesions, evidently of infectious-toxic origin. The intense hematuria, a minute tuberculous process in the lung and the failure of medical measures justified removal of the organ. The man, aged 31, returned a year later, with hematuria as before, and the pulmonary process more advanced.

Spinal Anesthesia in Urology.—Broglio reports seventy-six completely successful applications of spinal anesthesia in eighty operations on the urogenital apparatus. A rise in temperature was noted in sixty-nine patients, four had mild headache, seven vomited, and in two cases there was retention of urine for one day and nine days.

Riforma Medica, Naples

42: 601-624 (June 28) 1926

Typhoid Fever. A. Barlocco and B. Bisbini.—p. 601.
*Pneumothorax and Laryngeal Tuberculosis. P. Russi.—p. 605.
Suicides in Children. F. P. Annecchino.—p. 614.
*Pseudoperitonitis from Ascarides. E. Capecchi.—p. 619.

Pneumothorax and Laryngeal Tuberculosis.—Russi finds artificial pneumothorax a valuable weapon in treatment of laryngeal tuberculosis unless it has progressed too far.

Pseudoperitonitis from Ascarides.—Capecchi made an exploratory laparotomy in a young woman who had been suffering for a year from pains localized around the navel and had lost considerably in weight. The disturbances were due to the presence of ascarides, and disappeared after administration of santonin.

Brazil-Medico, Rio de Janeiro

1: 305-316 (June 12) 1926

The Teaching of Therapeutics in Brazil. F. São Paulo.—p. 305.
*Meningitis from Helminthiasis. A. Valerio.—p. 309.
Asthma and Its Treatment. Segard.—p. 310.

Ascarid Meningitis.—Valerio's case confirms the possible action of ascarid toxins in inducing convulsions, paralysis and injury of the blood. The boy, aged 6, presented the complete picture of grave meningitis, with diarrhea, but all the symp-

toms subsided under treatment of the helminthiasis. Ascarids had been found in both vomit and stools, and in the latter also tenia segments and trichocephalus.

Revista de la Soc. Arg. de Biología, Buenos Aires

2: 1-112 (April) 1926

Immunity in Neurotropic Ectodermoses. R. C. Biglieri.—p. 5.
*Electrodialysis of Serums. R. Wernicke and F. Modern.—p. 16.
*Yohimbin and Nicotine. B. A. Houssay and E. A. Molinelli.—p. 26.
*Spontaneous Chagas' Disease in Dog. S. Mazza.—p. 33.
*Scarlet Fever Toxin. J. M. Miravent and E. Chiodi.—p. 42.
Gastric Lipomas. A. E. Bianchi.—p. 47.
*Hyperplasia of Glands in the Pylorus. C. M. Ramírez Corria.—p. 5b.
Chagas' Disease in an Argentine Woman. S. Mazza.—p. 79.
Staining of Microfilaria. Brachetto-Brian.—p. 88.
Malformation of Pulmonary Artery. A. A. Robles.—p. 91.
*Kala-Azar in Children. S. Mazza and J. Cornejo Arias.—p. 96.
*Insulin and the Parathyroids. M. A. Magenta.—p. 102.

Electrodialysis of Antitoxic Serums.—Wernicke and Modern succeeded with electrodialysis in precipitating out the active globulins in diphtheria and tetanus antiserums. The antitoxic fraction necessarily accompanies them. The antiserum is diluted 20 per cent, and certain salts are added, according to Pauli's method.

Action of Yohimbin on the Splanchnic Nerves and of Nicotine on Secretion of Epinephrine.—Houssay and Molinelli relate that yohimbin checks the blood pressure-raising action from stimulation of the splanchnic nerve. It also reduces and inverts the pressure-raising action of nicotine, and checks almost completely the epinephrine-secreting action of stimulation of the splanchnic nerve or injection of nicotine.

Spontaneous Infection of the Dog with Schizotrypanum Cruzi.—Mazza remarks that the case reported is the first recorded instance of spontaneous infection of a dog with the agent of Chagas' disease. Nine species of the triatoma intermediate host insect are known in Argentina.

Scarlet Fever Toxin.—Miravent and Chiodi have prepared a toxin for the Dick test and worked out a method for standardization. Heating the toxin to 105 C. for an hour yields less false reactions than when the heating is only to 90 C. for an hour.

Hyperplasia of Pyloric Glands.—Ramírez Corria believes that he has demonstrated the presence of embryonal germs of glands of the type of Brunner's glands in the walls of stomachs with pathologic processes, adenomas, ulcer or cancers. The irritation from the pathologic process induces a reaction on the part of these embryonal glands, and they enlarge, forming patches of hyperplasia. His photomicrographs show this plainly and that there is no tendency to a neoplasm.

Kala-Azar in Argentina.—The two cases described, in children aged 5 and 9, are the first to be published in Argentina of autochthonous infantile kala-azar. The diagnosis was aided by the irregular outline of the hypertrophied spleen, its hardness and resistance, and lack of tenderness. The hypertrophied spleen of malaria, on the other hand, enlarges evenly, losing its original lobulation. The lack of any influence from quinine and the prompt improvement under antimony and potassium tartrate confirmed the diagnosis.

Insulin and the Parathyroids.—Magenta has been investigating on parathyroprival dogs and rats the possible influence of the parathyroids on insulin hypoglycemia. Dogs with pronounced tetany were more sensitive to the toxic and convulsion-inducing action of the insulin, but those without tetany responded to the insulin like normal dogs. Rats did not seem to be affected either way by removal of the parathyroids, so far as insulin was concerned.

Siglo Médico, Madrid

78: 25-48 (July 10) 1926

Immunity in General. Martin Salazar.—p. 25.
*Posttyphoid Myocarditis. G. R. Gonzalo.—p. 26.
The Modern Serology of Syphilis. E. Meinicke.—p. 28.
Peptic Ulcer and the Mechanism of Its Cure by Gastro-Enterostomy. J. Luna Gañán.—p. 30. C'tn.

Treatment of Posttyphoid Myocarditis.—Gonzalo remarks that the treatment must vary according to the stage of the typhoid infection at which the myocarditis develops. At the height of the infection, in addition to the usual measures to combat the typhoid, especial care must be taken to avoid straining the heart in any way; the circulation should be promoted, and kidney and skin functioning stimulated, refraining from strong heart stimulants except in extremely severe cardiac insufficiency, as they might easily have a fatal effect. On the other hand, the acute phase of the typhoid once past, there is not so much danger from heart tonics. In spite of every care, the heart may weaken beyond recuperation during the height of the disease or in convalescence, either from acute dilatation or as heart failure, and the family should be warned of the danger, and be instructed in the emergency measures required.

Archiv für Psychiatrie und Nervenkr., Berlin

77: 321-506 (June 20) 1926. Partial Index

*Typhus Complications in the Central Nervous System. P. M. Feldmann. —p. 357.
Intraspinal Insufflation of Air to Relieve Neuritis Pains. M. Fischer. —p. 445.
Single Virus in General Paralysis. G. C. Peracchia.—p. 494.

Nervous Complications of Typhus.—During the typhus epidemics in Russia (1920-1921) Feldmann studied twenty-eight cases of hemiplegia, eighteen cases of disseminated encephalitis, four cases of disease of the spinal cord and one case of acute hydrocephalus, as complications of typhus. The intensity of the nervous symptoms did not correspond to the severity of the typhus fever in the patients. The motor disturbances were of the hemiplegia or hemiparesis type in 73 per cent. The facial nerve was usually affected. Brain diseases were more common than diseases of the spine. These complications were extremely persisting, especially those of the medulla. Speech disturbances were the bulbar symptom which persisted longest.

Deutsche medizinische Wochenschrift, Berlin

52: 1069-1112 (June 25) 1926

Semicentennial of the Reichsgesundheitsamt. B. Möllers.—p. 1069.
Disinfection of Sputum. Konrich.—p. 1073.
*Syphilitic Infection. W. Kolle and E. Evers.—p. 1075.
*Precipitin Serums. W. Gaehtgens.—p. 1076.
Standardization of Vaccine Virus. K. Arnold and M. Kopp.—p. 1079.
*An Injurious Floor Wax. J. Geppert.—p. 1080.
Biologic Standardization in Russian Pharmacopeia. O. Steppuhn.—p. 1081.
*Addiction and Suicide. E. Joël.—p. 1082.
Venereal Diseases in Children. W. Grumach.—p. 1084.
Experts in Occultism. A. Hellwig.—p. 1085.
*Human Body and Phylogenesis. H. Münter.—p. 1087.
Venereal Diseases in Children. H. Davidsohn.—p. 1090. C'td.
*Competition in Lowest Death Rate. E. Roesle.—p. 1092.
Social Insurance. Fuisting.—p. 1094.

Syphilitic Infection.—Kolle and Evers found spirochetes in inguinal lymph nodes of rabbits in amounts sufficient for infection of other rabbits as soon as thirty minutes after rubbing the infectious material for one minute into the scratched skin of the scrotum. The distance from the point of infection to the lymph nodes was about 6 cm. Similar experiments on guinea-pigs revealed spirochetes in the lymph nodes as early as five minutes after infection. Recurrens spirochetes and trypanosomes invade the lymph glands within two minutes. It is therefore evident that any attempt at local disinfection after the intercourse has very little chance of success. It is better to administer a strong dose of arsphenamine intravenously.

Precipitin Serums.—Gaehtgens recommends immunization with a mixture of the serum with lipoids extracted from the meat of a species different from the one the serum of which is used for injection. This method seems to induce formation of stronger antiserums than the injection of the serum alone. When using lipoids extracted from the same species as that of the serum injected, he obtained less specific precipitins.

An Injurious Floor Wax.—Geppert warns against sleeping in a room which smells strongly of floor wax or oil paint. Poisonings occur in such rooms.

Addiction and Suicide.—Joël deals with the common psychopathic root of the drug addiction and of the tendency to self-annihilation; the attitude of addicts shows a great indifference toward their progressive destruction. They even regard a

partial loss of their faculties, especially of the sexual, as an advantage. Their hostile attitude toward life is similar to that of the Russian religious sect of Skoptzi, who castrate themselves, as well as abstain from alcohol. In other groups excessive sexual activity evidently has a similar purpose of self-annihilation. The large percentage of the homosexual among addicts is another indication of the close relationship between anomalies of the sex instinct, addiction to drugs, and tendency to suicide. Passionate gambling is also frequently an equivalent of suicide. The churchyards of Monte Carlo do not show necessarily that the gamblers had no other choice left except to kill themselves. At least part of them had been potential suicides when they came to gamble.

The Human Body and Phylogenesis.—Münter shows in detail on the human skeleton the evidences of phylogenesis. Some of the differences between the skeleton of man and of lower animals are acquired after birth. This applies especially to the curvature of the lumbar spine and the adult form of the pelvis. Man is the only animal which does not possess at birth the same attitude of the limbs as his parents. Outside of the atavistic formations, there are some anomalies of a progressive nature which indicate the probable future development of man.

Competition in Minimum of Mortality.—Roesle reviews the European statistics. The Dutch mortality of 9.8 is the best European minimum. The world record is kept by New Zealand with 8.3. The birth rate has declined rapidly in the northern countries. Sweden, Esthonia and England and Wales have recently dropped even below France with her 19.2 natality. The infant mortality is very low in Norway, Sweden and Holland (below 6). The decrease of tuberculosis mortality has stopped in England and Holland. The tuberculosis death rate is increasing lately in Denmark.

Klinische Wochenschrift, Berlin

5: 1161-1208 (June 25) 1926

Heredity in Otology. W. Albrecht.—p. 1161.
*Weil's Disease. H. Uhlenhuth and H. Grossmann.—p. 1163.
*Transplantation of Human Cancer. H. Kurtzahn.—p. 1166.
*Degkwitz' Measles Serum. C. Noeggerath et al.—p. 1168.
*Roentgen Diagnosis of the Duodenum. O. David.—p. 1174.
*Active Serums in Diagnosis. C. Bruck et al.—p. 1176.
Sanocrysin in Pulmonary Tuberculosis. Jansen and Weber.—p. 1179.
*Shock Treatment and Peripheral Nerves. Kauders and Stransky.—p. 1182.
*Biology of the Skin. R. Hauptfeld.—p. 1184.
Rigidity from Choking. W. Blume.—p. 1185.
*Blood Groups in Psychiatry. Gundel.—p. 1186.
Peripheral Sensory Paralysis. P. Matzdorff.—p. 1187.
*Goat's Milk in Infant Feeding. H. Behrendt.—p. 1187.
Periodic Examinations. A. Korach.—p. 1191.
Ergotamine in Epilepsy. Von Lebinski.—p. 1206.
Skin Reaction to Adhesive Plasters. Seeliger.—p. 1207.

Weil's Disease.—Uhlenhuth and Grossmann found probable serologic differences in spirochetes obtained from different patients with Weil's disease. There are unquestionable serologic differences in rats' spirochetes which are pathogenic for guinea-pigs. These facts strengthen their opinion that *Spirochaeta icterohaemorrhagiae* is a variation of saprophytic spirochetes living in the water.

Transplantation of Human Cancer.—Kurtzahn had transplanted upon himself pieces of a breast cancer immediately after their removal from a patient. The implants became rapidly—within six days—necrotic. He concludes that homoplastic transplants of human cancer behave like homoplastic transplants of normal epithelium. They induce no histologic reaction exceeding that which occurs after implantation of any tissue foreign to the body. It is possible that a transplant of cancer to other cancer patients might succeed, but this experiment cannot be made on human beings.

Degkwitz' Measles Serum.—Noeggerath, Oster and Viethen emphasize the need, as well as the technic, for ample controls in testing the preventive action of serums, and conclude from very exact observations that the Degkwitz serum obtained from sheep injected with alleged measles virus is without action if injected before infection. When injected at the time indicated by Degkwitz, it seems to have had an unfavorable effect. They suggest that Degkwitz should publish his method of production and testing of the serum, and that it should be taken off the market.

Roentgen Diagnosis of the Duodenum.—David recommends direct filling of the duodenum with the contrast substance in roentgen diagnosis.

Active Serums.—Bruck, Behrmann and Rosenberg had excellent results in syphilis and gonorrhea with a modification of the Hecht method. With comparatively large amounts of serum, it is superior to the classical technic. Infants have not enough hemolytic amboceptor, and have to be tested with the classical method.

Shock Treatment and Peripheral Nerves.—Kauders and Stransky poisoned guinea-pigs with lead, and injected them with small amounts of milk. These animals lived longer than the controls poisoned with lead, and the changes in the peripheral nerves were less pronounced.

Biology of the Skin.—Hauptfeld was unable to confirm Vollmer's observation on lowering of the acidity of the urine by intracutaneous injections of physiologic solution of sodium chloride.

Blood Groups in Psychiatry.—Gundel found group III comparatively more frequent in mental diseases than in other patients.

Goat's Milk in Infant Feeding.—Behrendt warns against feeding young infants exclusively with goat's milk. It is dangerous even as an addition to human or cow's milk. Feeding of goats with green fodder diminishes the danger a little.

Medizinische Klinik, Berlin

22: 1023-1060 (July 2) 1926

*Cancer of Breast. H. Schloffer.—p. 1023.
*Drinking of Electrolytes. W. Arnoldi and H. Zimmermann.—p. 1029.
Tuberculosis of the Kidney. J. J. Stutzin.—p. 1032.
Bismuth as Diuretic. W. Robitschek.—p. 1034.
Epidemiology of Influenza. E. Kindborg.—p. 1039.
*Fissure of Anus. S. Rechnitzer.—p. 1039.
Effusions in Joints. Von Grosschopff.—p. 1040.
Sedimentation and Mátéfy Reaction in Tuberculosis. P. Sedlmeyr.—p. 1040.
Malaria Psychosis as War Injury. Von Schnizer.—p. 1045.
Carbon Dioxide Baths. Schmeidler.—p. 1046.

Cancer of Breast.—Schloffer enumerates the blunders made in treatment of cancer of the breast. Delaying the intervention until the diagnosis is disastrously sure, is one of them; exploratory excision of small pieces—which leads easily to metastasis—is another. The diagnosis should be made from a frozen section during the intervention. Another avoidable blunder is removal of the breast alone, without sacrificing the muscles and all the accessible lymph nodes—including the supraclavicular in slender patients. Local recurrences of the cancer are due either to opening of the cancer tissue and direct inoculation, or to the desire to avoid the necessity for transplantation of skin flaps to cover the defect. It is pathetic to hear some of these patients recall gratefully how rapidly and nicely the wound had healed.

Rapid and Slow Drinking of Electrolytes.—It is a well known fact that the effects of mineral waters depend partly on circumstances which would not seem essential. Arnoldi and Zimmermann investigated the influence of the rapidity of the drinking on the effects of a water containing chiefly sulphates, lithium and sodium chloride (Salzschlirf). Rapid drinking (750 cc. within fifteen minutes) accelerated the extrarenal, slow drinking (one hour) the renal elimination of waste products and acid. The bowels moved soon after the rapid intake, which also preserves the alkali and phosphates, and causes a transitory increase of the alkali reserve of the organism; slow drinking has the opposite action. Slow drinking did not change the blood sugar concentration; rapid drinking caused hyperglycemia.

Fissure of Anus.—Rechnitzer extols the curative value of Peruvian balsam. It acts well also in any other fissures of the skin (nipple, fingers, etc.).

Mitteil. a. d. Grenzgeb. der Med. und Chir., Jena

39: 163-296, 1926

Inferiority from Erect Gait. R. J. Harrenstein.—p. 163.
*Peptic Ulcer. H. Lehmann.—p. 185.
*Tuberculosis of the Stomach. E. Melchior.—p. 205.

*Prognosis in Cholelithiasis. P. Jaguttis.—p. 255.
*Splenectomy in Hemolytic Jaundice. Jacobi and T. Naegeli.—p. 270.
*Acanthosis Nigricans and Cancer. H. Küttner.—p. 276.

Peptic Ulcer.—Lehmann found a chronic peptic ulcer of the stomach or duodenum, or a scar from such, in 20.2 per cent of his 1,000 necropsies. The stomach was affected two and a half times more frequently than the duodenum. There were nine times more scars than ulcers in the stomach. The majority of the scars were localized in the cardiac half of the middle part of the stomach. Most of them affected the lesser curvature. These ulcers have a better healing tendency than those which are near the pylorus. The duodenal ulcers have a good healing tendency. However, perforation is frequent in those which are situated in the anterior wall.

Tuberculosis of the Stomach.—Melchior points out that although the stomach has a decidedly better resistance to tuberculosis than the rest of the digestive tract, tuberculosis of the stomach is by no means as rare as commonly assumed. The diagnosis is difficult, and frequently is made only by the histologic examination. Resection is the method of choice. Pulmonary tuberculosis should not be a contraindication against surgery of the stomach; quite the contrary, the surgical intervention is of vital importance because of the unfavorable influence of disturbed digestion on the pulmonary process.

Prognosis in Cholelithiasis.—Jaguttis investigated the fate of 260 patients who had been treated at the Internal Clinic at Königsberg in the years 1900-1914. He concludes that there is no reason to widen the present indications for surgical treatment of gallstones, and especially that a trial of conservative treatment is just as advisable as before. Only about one half of the patients have their first attack before they are 40 years of age. After this age, the danger of surgical intervention is considerable. He mentions the favorable influence of large amounts of berries (currants in one case) when regularly taken.

Splenectomy in Hemolytic Jaundice.—Jacobi and Naegeli warn against roentgen irradiation of the spleen in hemolytic jaundice. It may entail adhesions that may cause difficulties in splenectomy, which is the only rational treatment.

Acanthosis Nigricans.—Küttner does not regard acanthosis as an absolute indication for exploratory laparotomy, since a tumor was found in only 45 per cent of the cases. If the patient is young and suffers from familial obesity or diabetes, or other disturbances of development, the acanthosis may be idiopathic. Laparotomy should be considered seriously in every other case. Acanthosis is characterized mainly by a pigmentation and papillary condition of the skin.

Monatsschrift für Kinderheilkunde, Leipzig

32: 387-514 (June) 1926

Vienna Institute for Welfare Work for Mothers and Children. L. Moll.—p. 387.
*Heating Screen in Skin Diseases. M. Allina.—p. 400.
Recuperation and Tuberculosis. H. Eberhartinger.—p. 404.
Nutrition in Atrophic Infants. J. Franke and A. Wittenberg.—p. 413.
Nervous Anorexia. O. Loewy.—p. 421.
*Casein-Free Diet in Diarrhea. L. Moll.—p. 428.
Erysipelas. J. Raimann.—p. 446.
*Feeding of Children. E. Stransky.—p. 450.
Microdetermination of Fat in Milk. L. Tavs.—p. 487.
Spirilla in Diarrhea. A. Trias.—p. 491.
Gonorrhea in Children. F. Wengraf.—p. 503.
Microdetermination of Milk-Sugar in Milk. A. Wittenberg.—p. 510.

Heating Screen in Skin Diseases.—Moll devised a treatment of eczema and pyodermia in infants by a screen containing electric lamps. Allina reports good results, but warns against the possibility of overheating the infant. Dermatoses of the face and scalp are not suitable for this treatment.

Casein-Free Diet in Diarrhea.—Moll recommends exclusion of casein from the diet in grave diarrhea. The return to milk should start cautiously, with gradually increasing amounts.

Feeding of Children.—Stransky ascertained the voluntary food intake in a group of children between the ages of 1 and 6 years. The food requirement is about 110-120 calories per kilogram of body weight. The optimum composition was 15 per cent proteins, 35 per cent fat and 50 per cent carbohydrates. The poor eaters prefer concentrated food rich in protein and fat. The intervals between the meals should be about four hours. A pint of milk daily is sufficient. Poor eaters should be allowed still less.

Wiener klinische Wochenschrift, Vienna

39: 741-772 (June 24) 1926

*Goiter and Cretinism. A. Kutschera-Aichbergen.—p. 741.
*Serotherapy of Viper Bites. R. Kraus.—p. 744.
*Preapoplectic Loss of Tonus of Vessels. V. Kollert.—p. 745.
Alleged Inversion of Duodenum. E. Pernkopf.—p. 746.
*Retinitis Pigmentosa with Tuberculosis. A. M. Rosenstein.—p. 749.
*Conjunctiva in Arsphenamine Intolerance. S. Szandicz.—p. 751.
*Ephedrine. L. Pollak and W. Robitschek.—p. 753.
*Treatment of Peptic Ulcer. A. Eiselsberg.—p. 755. C'en.
Digestion and Dermatosis. S. Ehrmann.—p. 756.
Protein Treatment of Diabetes. G. Singer.—p. 757.
Rheumatism of Menopause. J. Bauer.—p. 758.
Results of Acute Nephritis. P. Saxl.—p. 759.
Therapeutic Collapse. A. V. Frisch. Supplement.—pp. 1-18.

Goiter and Cretinism.—Kutschera-Aichbergen regards both goiter and cretinism as manifestations of an endemic dystrophy which also causes other anomalies, found frequently in the same regions. Mongolism, nanosomia, chondrodystrophy, heart changes and many stigmata may be classed under the same heading. His personal experience in regions of endemic goiter—including the treatment of over 1,600 patients—convinced him that the disturbance of the thyroid cannot be the cause of cretinism which is not a simple deficiency of the thyroid, such as myxedema. Not one complete success had been obtained by him in any case of true cretinism. Especially the idiocy remained practically the same. The improvements were limited to an increased vivacity and to growth of bones. The goiter and hypothyroidism usually followed the idiocy which had frequently begun after a fever. In the families there was rarely more than one child who was a typical cretin, but most of the other children presented various anomalies, including idiocy. A large percentage of the population of such districts seems to be degenerate. The reaction to external impressions is very sluggish, although these people are not hypothyroid. It takes such a man a long while before he finds his purse and takes out the money to pay for his street car ticket. Many of them present an enormous number of flea bites on the skin. This phenomenon, called by the author purpura pulicosa, is due to the fact that the small hemorrhage caused by the flea bite requires from four to six weeks for resorption instead of the normal twenty-four to forty-eight hours. Difficult pronunciation is surprisingly frequent in seemingly normal people from such districts.

Serotherapy of Viper Bites.—Kraus' results indicate that the South American antibothrops serum might be of value in treatment of people bitten by the European viper (*Vipera aspis*).

Preapoplectic Loss of Tonus of Vessels.—Kollert observed three patients with hypertension who saw red before a cerebral hemorrhage. In one of them he came in time to make a preventive venesection, but the patient succumbed five months later to another attack which had also been announced by the same symptom. He explains it by dilatation of the blood vessels of the retina parallel with a dilatation of the cerebral blood vessels. According to Westphal, the apoplectic hemorrhage arises after a period of contraction of the cerebral arteries, when they again become dilated.

Retinitis Pigmentosa with Tuberculosis. — Rosenstein observed retinitis pigmentosa and pulmonary tuberculosis in three brothers whose parents were cousins. All the ancestors, as far as she could ascertain, were healthy peasants.

Conjunctiva in Arsphenamine Intolerance.—Szandicz confirms the occurrence of hyperemia of the conjunctiva immediately after injection of arsphenamine in patients who are hypersensitive to it. The redness was limited to one eye and lasted about fifteen minutes in his case. He attributes persistent pains in the joints in his patient to the arsphenamine intolerance.

Ephedrine.—Pollak and Robitschek confirm the favorable action of 0.1 Gm. ephedrine hydrochloride taken by mouth in asthma patients.

Treatment of Peptic Ulcer.—Eiselsberg reviews the history and his personal experiences in surgical treatment of ulcers of the stomach and duodenum. Billroth felt very badly when the histologic examination in his fifth or sixth resection of the stomach revealed only an ulcer scar instead of the expected scirrhus. His respect for any organ was so great that he was conscience stricken for having removed a part of a noncancerous stomach. The patient, however, felt well until he died five years later from a hemorrhage originating in another small ulcer. Eiselsberg has had 3 per cent mortality in the last 449 cases of resection of the stomach for ulcer. He considers this as 3 per cent more mortality than there should be. He thinks that at present the respect for the stomach is very low. He doubts whether resection will remain the method of choice in treatment of ulcers, as it is now. He would not mind the discovery of some internal treatment which would make this interesting chapter of surgery superfluous.

Zeitschrift für die ges. exp. Medizin, Berlin

50: 297-623 (May 25) 1926. Partial Index

Biology of the Skin. VII. E. Edelstein and H. Vollmer.—p. 297.
Colon Bacillus Agglutination. Pesch and Simchowitz.—p. 301.
Internal Secretion of the Sex Glands. E. Kylin.—p. 318.
*Action of Atropine on the Large Intestine. H. S. Lurje.—p. 339.
Donders' Venous and Arterial Pressure. Rehfisch.—p. 359.
Protein and Creatinin Metabolism After Splenectomy. Weicksel.—p. 415.
*Anaphylaxis and Roentgen Irradiation. Klewitz and Wigand.—p. 427.
Experiments with Rhodan Salts. L. Takács.—p. 432 and 440.
Microanalysis of Blood Serum Albumin. Petschacher et al.—p. 449.
Sensitivity of Tympanic Membrane and Cavity. Manasse.—p. 477.
Physical Bases of Electrocardiography. F. Schellong.—p. 488.
Potential Energy of Food in Childhood. E. Helmreich.—p. 587.
Leukocytosis and Hypertonia from Epinephrine. H. Baar.—p. 594.
Nestle's Infant Food and Scurvy in Guinea-Pigs. A. Lüüs.—p. 610.
Water and Alcohol as Stimuli for Gastric Secretion. J. Vándorfy and M. v. Várady-Borbély.—p. 615.
*Blood Transfusion and the Spleen. H. Vollmer and J. Serebrijski.—p. 621.

Action of Atropine on the Large Intestine.—In a series of over fifty experiments on cats, Lurje found that atropine injected into the blood or subcutaneously caused relaxation of the spastically contracted large intestine. Atropine had no influence on tonus and contractions when introduced directly into the intestine or stomach. The effect of the drug was the same whether the connection of the loop in question with the central nervous system was interrupted or not. In therapeutic use, atropine should be administered intravenously or subcutaneously; when rapid action is desired the former method is preferable.

Anaphylaxis and Roentgen Irradiation.—In experiments on thirty guinea-pigs, Klewitz and Wigand found that roentgen irradiation neither prevented nor influenced anaphylactic shock. In commenting on the relation of these experiments to bronchial asthma, they point out that the clinical results of roentgen irradiation in the latter suggest that conditions may be present there which are not found in anaphylactic shock, and which make it more susceptible to the action of the rays.

Influence of Blood Transfusion on the Size of the Spleen.—Vollmer and Serebrijski found that intraperitoneal blood transfusion in the rabbit is followed by enlargement of the spleen. This enlargement is brought about by way of the lymph channels between the peritoneum and the spleen. Intravenously transfused blood caused no increase in the weight of spleen or liver. In the case of the intraperitoneal transfusions, the animals were killed two days after the last of four transfusions, carried out within eight days, and the organs were examined within a few hours. The animals transfused intravenously were killed one hour or less after the transfusion, and the organs examined two or four hours after death.

Zentralblatt für Gynäkologie, Leipzig

50: 1553-1616 (June 12) 1926

*Ninhydrin Flocculation Test for Pregnancy. W. Vogel.—p. 1554.
Virulence of Streptococci. F. Baake.—p. 1561.
*Streptococcus Serotherapy and the Blood Picture. Lehfeldt.—p. 1564.
Multiple Krompecher Carcinoma of the Vulva. N. Temesváry.—p. 1573.
*Elderly Primiparas. G. Lundh.—p. 1582.
Legalized Interruption of Pregnancy. A. Niedermeyer.—p. 1585.
Pregnancy Occurring in Amenorrhea. L. Flory.—p. 1591.
Perforation of the Uterus. W. Buschmann.—p. 1592.
Sedimentation Test in Gynecologic Diseases. I. J. Iwanow.—p. 1600.

Ninhydrin Flocculation Test for Pregnancy.—To prepare a "standard solution," Vogel dissolves 2.5 Gm. of bicarbonate of potassium in 945 cc. of distilled water and adds thereto 55 cc. of official lime water solution. A ten liter bottle is filled with carbon dioxide, the air being almost entirely driven out of the bottle. The solution is now poured into this bottle and the whole well shaken. Ten cubic centimeters of this "standard solution," to which are added 1.75 cc. of serum and 0.2 cc. of a 1 per cent aqueous ninhydrin solution, is boiled in a water bath for three minutes. If the serum is from a nonpregnant woman, the albumin separates in coarse, grayish white shreds; if it is from a pregnant woman, the albumin remains in suspension or, in early pregnancies, very fine blue flakes appear. This test was positive in 97.8 per cent of 281 cases of pregnancy. In 212 nonpregnant women, it gave a negative reaction in 97.7 per cent. In the first three months of pregnancy the test proved reliable in only 75 per cent of cases. He holds that this test, so simple that it can be carried out by the general practitioner in his own office, is at least as reliable as the best serologic tests for pregnancy which we possess.

Blood Picture in Streptococcus Serotherapy.—About two days after treatment with antistreptococcus serum, Lehfeldt saw regression of the phenomenon of shifting to the left, a reappearance of the eosinophils, and a rise in the relative number of lymphocytes in patients with puerperal and surgical sepsis. A similar blood picture followed antistreptococcus serum injection in mice with experimental streptococcus infection. He affirms that the blood picture changes can be used as a test for the favorable influence of the serotherapy in the individual case.

Elderly Primiparas.—In a material of 976 primiparas between 30 and 47 years of age, Lundh found that the duration of labor was longer and the number of cases of eclampsia and of delivery by forceps greater in those married longer than two years than in the unmarried and those married less than two years.

50: 1681-1744 (June 26) 1926

Results of Dienst's Pregnancy Test. K. Fink.—p. 1681.
Placenta Adherent Over Interstitial Myomas. A. Ecke.—p. 1688.
*Peritonitis After Cesarean Section. H. Schultheiss.—p. 1696.
High, Transverse Subcutaneous Incision. O. P. Mansfeld.—p. 1701.
*Cure of Primary Sterility. F. Isbruch.—p. 1705.
Technic of Tubal Sterilization. H. Peitmann.—p. 1720.
Examining for Fetal Position, etc. A. Hochenbichler.—p. 1721.
Autohemotherapy in Vomiting of Pregnancy. A. I. Malinin.—p. 1729.

A Rare Cause of Peritonitis Following Cesarean Section.—Schultheiss describes two fatal cases of peritonitis following transperitoneal cesarean section, in which the portal of entry of the micro-organisms was found to lie in necrosis of the uterine wall in the region of the cervix, caused by the pressure of the head. The risk which injured soft parts present in this respect should be given consideration in deciding the time for cesarean section in labor rendered difficult by disproportion between head and pelvis.

Operations on Ovary and Tube to Relieve Sterility.—Isbruch was able to check up on forty-one of seventy-two primarily sterile women who were operated on by interpolar resection of the ovary for partial cystic degeneration of the organ or by a plastic operation for stenosis of the fallopian tube. In 43.9 per cent of these, pregnancy had ensued. Nineteen living children had been born, five pregnancies were still in progress, and there had been two abortions. Eleven of the women who became pregnant were between 27 and 36 years of age. One had been married for thirteen years.

Mikrobiologicheskiy Jurnal, Leningrad

2: 157-260, 1926. Partial Index

*Local Immunization of the Cornea. Kisin and Bazilevskaya.—p. 157.
Antivirus Treatment of Postpartum Affections. P. D. Tron.—p. 170.
Oral Immunization Against Cholera. Gorovits-Vlasova and Pirozhnikova. —p. 180.

Immunization of the Cornea by Besredka's Method.—Kisin and Bazilevskaya injected pneumococcus antivirus filtrate into one eye in eighteen guinea-pigs. Both corneas were infected one or two days later. The course of this experimental keratitis was notably milder in the vaccinated eye. Analogous experiments were made with staphylococcus antivirus in nine guinea-pigs. The results were positive, except in one. A bilateral keratitis was induced in three guinea-pigs, and then one eye was treated by subconjunctival injections of staphylococcus antivirus. In two animals, regression of the morbid process started by the third day in the treated eye, while in the untreated eye it did not begin until the fifth day. The immunity is evidently purely local, not being conferred on the other eye.

Russkaya Klinika, Moscow

5: 631-776 (May) 1926. Partial Index

Septic Infection. A. Gubareff.—p. 641.
*Ferment Treatment in Children. A. Tur.—p. 656.
Latent Tuberculosis and Pregnancy. K. Punin.—p. 674.
*The Skin Test with Induced Pneumothorax. V. Ioffe.—p. 688.
Blood Changes in Diabetes. Tsukershtein and Shtraikher.—p. 698.
Influence of Ultraviolet Rays on the Skin. S. Vail.—p. 720.
The Lymphatic System in Cancer. B. Rogalsky.—p. 727.
Hemophilic Joint Lesions. B. Petroff and A. Remizoff.—p. 742.

Ferments in Treatment of Young Children.—Research was made on children, aged from over 6 weeks to 12 years, with acute or chronic disturbances of nutrition or digestion. The usual doses seem to be too small, and this may be responsible for the frequent failure of the treatment. Tur prescribes a single dose of 0.5 Gm. of pepsin in 10 cc. of a decinormal hydrochloric acid solution, for infants, and 1 Gm. or more, in from 15 to 30 cc. of the same solution, for older children. The pepsin is given before or with every feeding. A single dose of 0.1 or 0.15 Gm. of pancreatin or diastase in a 1 per cent solution of calcium lactate, is given to infants, in the first months of life, and 0.2 or 0.3 Gm. to older infants, with every feeding or immediately after. The digestive potency of the gastric and duodenal juices seems to increase notably under the pepsin treatment. Pancreatin and diastase may enhance the splitting of proteins, fats and carbohydrates in the stomach, if the gastric juice is but slightly acid. Besides this, they considerably increase the amylolytic, lipolytic and tryptic action of the duodenal juice. Tur says that the results from this method of ferment therapy were encouraging in his seventeen cases.

Testing the Effect of Pneumothorax in Tuberculosis.—Ioffe emphasizes that the Pirquet tuberculin skin reaction may indicate whether the artificial pneumothorax will be of benefit or not. The reaction reveals the condition of immunity in the tuberculous patient, and may also show the influence of the pneumothorax before there are any clinical changes. If the tuberculin test does not change in the course of the pneumothorax, no favorable clinical results can be expected. If the reaction is negative or is getting weaker, the prognosis is unfavorable. On the other hand, it is good, if the reaction becomes more intense under the collapse treatment of the lung.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 137-317 (July 10) 1926

*Sterile Wedlock. J. A. van Dongen.—p. 150.
Free Diaphragmatic Hernia. D. Schoute and C. Orbaan.—p. 160.
Tertian Malaria with Long Latency. J. J. de Jong.—p. 163.

Treatment of Sterility.—Van Dongen has analyzed 510 cases of sterile wedlock in his practice in the last ten years. In two of four cases in which the sterility was of ten to fifteen years' standing, conception followed in four or five months after dilation of the cervix and curetting, after twenty-four hours of laminaria. He warns against insufflation of the tubes or injection of a contrast substance, and against Ott's method of injecting charcoal into the abdominal cavity, regarding them as potentially dangerous and unreliable. He cites Schwarz' report in 1925 of 226 instances of childless marriages in which conception finally occurred in from 68 to 13.8 per cent, without extraneous intervention, while the proportions were 66.6 to 14 per cent in the seventy-four other women treated by dilation of the cervix. Van Dongen insists that our task is to improve the present crude and defective methods of examination and treatment, and trust more to Nature. No marriage should be labeled sterile until after the third year.

Svenska Läkaresällskapets Handlingar, Stockholm

52: 1-39 (June 1) 1926

*Liver Function Tests. J. Tillgren.—p. 1.
*Sarcoma of the Heart. F. Wahlgren.—p. 12.
Korsakoff's Disease. H. Marcus.—p. 28. C'tn.

Pathogenesis of Jaundice and Liver Function Tests.—Tillgren remarks that tests of liver function are now at the stage of development reached by kidney function tests ten years ago. He regards hyperbilirubinemia as fully as instructive in liver disease as the residual nitrogen in nephritis. It is preeminently useful in the diagnosis of latent, so-called acholuric jaundice, and in warning of hepatic damage. He confirmed on 100 patients the advantages of bromsulphthalein in chromodiagnosis of liver disease, and the negative responses in febrile diseases and in perniciosa with hyperbilirubinemia.

Sarcoma of the Heart.—Wahlgren compares two personal cases with fifty-two from the records.

Ugeskrift for Læger, Copenhagen

88: 633-652 (July 8) 1926

*Course of Glycolysis in the Blood. S. A. Holbøll.—p. 633.
*Fatal Poisoning from Bismuth Treatment. J. Munck.—p. 637.
Injury from Intra-Uterine Pessaries. R. Hastrup.—p. 641.

Course of Glycolysis in the Blood.—Holbøll found that the speed of the glycolysis did not depend on the amount of glucose present in the blood. The presence in normal blood of the more active form of glucose—"new glucose"—explains the more rapid glycolysis compared with diabetic blood.

Fatal Bismuth Poisoning During Treatment of Syphilis.—Munck's patient was a married man, aged 45, with a healthy child. Twenty years before there had been a transient eruption but nothing suggesting a chancre, and no treatment had been taken. Lately, some syphilids had developed on the scrotum and buttocks, and neo-arsphenamine was given. This induced fever and rheumatic pains, and bismuth was administered instead. When a total of 5.13 Gm. of bismuth had been reached, symptoms developed suggesting bismuth poisoning, and necropsy revealed cirrhosis of the liver, colitis, nephrosis and other changes characteristic of poisoning from heavy metals.

88: 653-672 (July 15) 1926

*Experimental Hermaphrodism. Pézard et al.—p. 653.
*Radical Operation on the Internal Ear. R. Lund.—p. 654.
The Physician in Organized Welfare Work for Children. Monrad.—p. 663.
The Promotion of Correct Nutrition. C. Jürgensen.—p. 667.

Experimental Periodic Gynandromorphism. — The cock illustrated here had the feathers removed in different areas and at different times after implantation of an ovary, and after implantation of testes when it was assumed that the ovary had been resorbed. The plumage grew again with male or female characters in the different crops of feathers. The periodic inversion is evidently due to slight fluctuations of the endocrine tissue to one or the other side of the effectual minimum. The phenomena correspond to the law of "all or nothing"—an instance of periodic inversion of the sex.

Radical Operation on the Internal Ear in Disease Secondary to Otitis Media.—Lund makes a practice of lumbar puncture at once in every case of acute destructive disease of the internal ear. If two cells per millimeter are found in the spinal fluid and no other symptoms indicate meningeal irritation, the lumbar puncture must be repeated in twenty-four hours at latest. If there are more cells than this, or if other symptoms are noted, the radical operation must be done at once. He analyzes the experiences with 117 cases.